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EUROPEAN COMMUNICATION COUNCIL

European Communication Council – Report 1997

EXPLORING THE LIMITS

Europe's Changing Communication Environment

Springer

The centrality of communication technologies in our everyday lives can hardly be doubted. Nor can their crucial importance in the continuous renewal and reinvention of how our societies work. However, while claims about what the 'information society' can offer us in terms of prosperity, abundance, pleasure and democracy abound, we need to take a hard look and try to distinguish between the feasible and the fantastic. Almost inevitably, the introduction and development of new technologies is accompanied by a high volume of hyperbole. Techno-hype has come to match political hype with regular pronouncements of forthcoming findings and discoveries, of new equipment to attend to most of life's chores, of coming cataclysmic changes in work habits, leisure time, perhaps even patterns of sleep. Clearly, experience has taught us to take most exaggerated claims with the traditional grain of salt and to maintain a proper sceptical approach. There are good grounds for this, as the history of technological developments in the communication field, as in most others, is led by initial misconceptions and thus is perhaps as much a history of failure rather than of success. Probably more inventions or innovations have gone down the drain than those that survived. Even with successful innovations – e.g., the telegraph, telephone, radio, etc. – the envisioned purposes were not realised but replaced by other uses that emerged from experience with the new appliances. But as successful technologies progressively revolutionised the habits of the modern world, the non-starters have quietly vanished, and we tend not to register the catalogue of failures. Changes in patterns of use have come about when large numbers of people have adopted new equipment and services as replacements for older ones or by accepting totally new technologies for their established behaviour. It is one thing to invent and produce new technologies, but adoption occurs only when people really want or actually need them. Producers try to do this by marketing enhanced, advanced, or even totally new devices and procedures, only when there is a broad based recognition of genuine added value. A good example is the so-called 'picture phone' which has been offered repeatedly since the early 1960's as a promising application. But each test trial has proven unsuccessful, mainly due to evidence of inadequate demand because people could not perceive enough added value. With the still newer technology of signal compression on tap, such trials may re-surface yet again, so we may not have heard the last from this front. In recent years, the techno-hype has trumpeted a number of potential wonders in television, all still figments of the imagination at this time, rather than accepted practice. Promises of enhanced television picture and sound (such as High Definition and D2 Mac) are still on the back burner, as is digital broadcasting. Interactive television (based on the digital format) still has an uncertain future because it may conflict with, rather than enhance, the essential story-telling, entertainment role of television which is one of its main appeals. Video-on-demand is another highly touted benefit in the offing, but has yet to demonstrate its advantages over video rentals in a number of tests to date, and there are some reasons to expect that it never will. Such examples of the failed promises of techno-hype are numerous but, before we 'throw out the baby with the bath water' we must also admit to a long list of obvious successful innovations (e.g., the VCR, CD, personal computers) where the hype turned out to be true. There is a tendency in some quarters to propound anti-techno-hype with the same intensity as techno-hype

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Europe´s Changing Communication Environment

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The European Communication Council (ECC) is an independent group of scholars from different European countries and from the US. Communication experts with different backgrounds are invited annually to either serve as Fellows of the Council or to participate in its work as Invited Authors by contributing their views and the results of their respective work.

The ECC's objective is to discuss trends and issues in European communication and report on them for the leaders and visionaries in communication companies and for leading policymakers. The range of issues to be considered is not limited; to maintain clarity and impact, however, ECC reports are meant to concentrate on key trends and to underline those issues which deserve higher profile in future debates.

The ECC is organised as an independent project at Freie Universität Berlin; its work is funded completely from private sources by MGM MediaGruppe München.

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Axel Zerdick

About the ECC and this Report

Axel Zerdick
Speaker of the ECC

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Academic training in Electrical Engineering, Law and Business Administration in Germany and Canada; degrees in Business Administration (Dipl.-Kfm., 1968) and Economics (Dr.rer.pol., 1970) at Freie Universität Berlin. Professional experience in systems analysis and data processing. Publications on media economics and communication policy. Has served on a number of state committees on media issues. Research and consulting for media and telecommunication companies, German and foreign media-related agencies and state parliaments.

About a year ago Michael Wölfle of MGM MediaGruppe München together with Birgit Hüther and Hans Lauber approached me first with a question, and then with an idea. The question was simple: what do European communication scholars and scientists know and think about the general trends that shape the development of communication, and what issues do they find of particular importance? Not surprisingly, the answer to this question had to be typical for the academic world: communication scholars – as their colleagues in other fields – specialise in many ways, and within each given field they tend to differentiate (and to disagree) rather than strive for common generalisations.

Some visionaries in media and communication companies, however, are curious about what communication science may have to contribute to their industries' future(s); the process of going through hundreds or thousands of interesting academic contributions, however, is simply at odds with their other obligations. This is where the idea came into play: it should be an interesting task for a group of experts to discuss trends and issues in European communication and report on them for the leaders and visionaries in communication companies as well as for leading policymakers. The term "European" in this context was meant to cover at least the main communication markets in Europe, but also include other European countries (within the EU or not) where interesting and important developments are taking place. It also was meant to signal a European perspective, differing from narrower national points of view, and with an outlook from Europe on developments in other countries (mainly in the US and in Japan).

The range of issues to be considered in the beginning of this process has not been limited: communication technologies, their potential applications, and their actual uses; telecommunications, broadcasting (public and commercial), and printed media; economic aspects of markets, companies, and technologies; perspectives of communication companies, communication regulators, and communication science. The limits, however, had to come from our final objective: to maintain clarity and impact, the report would have to concentrate on key trends, and underline those issues which deserve a higher profile in future debates.

To create such a report, three groups of scholars have been invited to co-operate in different ways. As the first group, three independent scholars with international reputations and from different academic backgrounds have been invited by me to serve as "fellows" of the European Communication Council. We decided early on that one of the fellows was to be a scholar from the United States, the others from important European countries: the co-operation of Percy Tannenbaum (University of California at Berkeley), Philip Schlesinger (University of Stirling,

UK) and Alessandro Silj (Research on Media Associates, Roma) has been the cornerstone of our work. In addition to exchanging texts (using new and old forms of communication technology), four meetings of three days each have been devoted to discussing key trends and issues as we saw them individually, and now see some of them in mutual agreement, as you can read in our common chapter on Emerging Issues.

The second group of scholars to contribute to this report are authors with international reputation on their respective fields of work, who were asked by the Council to formulate the imminent results of their respective work and views for the specific purpose and format of the report. The discussion of these contributions within the Council has been stimulating, and we are confident that they will also stimulate debate within the communication industries. We are most grateful to Eli Noam (New York), Klaus Schrape (Basel) and Wolfgang Seufert (Berlin), Roger Silverstone (Brighton), Gérard Claisse (Lyon), Richard Paterson (London), Antonio Pilati (Milano) and Giuseppe Richeri (Bologna), Jens Gaster (Brussels), Ulrich Wattenberg (Berlin and Tokyo), and Hans Kleinsteuber and Marcel Rosenbach (Hamburg) for sharing their ideas, insights and analysis. Two chapters have been written at our request by the third (small) group of contributors: Klaus Goldhammer and Ulrich Lange have been co-ordinating authors for the Council, making sure that things fit together, and giving creative input at every stage of our work. And as you now look at the final result of our co-operative efforts, two more contributions must be mentioned: Michael Zimmermann of MGM MediaGruppe München and Thomas Lehnert of Springer Publishing are responsible for the perfect professional appearance of this report.

To call our group "European Communication Council" is quite a challenge, and in several ways. One problem, of course, is that we did not find a better term to describe our objective (and ambition), and still want to make sure not to be misunderstood as some form of official group created by political decisions or led by corporate desires. Our relationship with MGM MediaGruppe München has – from the very beginning – been characterised by visible independence. Our relationship with European institutions is complementary (or rather complimentary), in three ways: first, we compliment (partly even admire) the important and successful work of European institutions, in particular that of the European Commission, the European Audiovisual Observatory, the European Information Technology Observatory, and also that of the European Institute for the Media – we have drawn on their work, and want to draw more of the deserved attention to it. Second, our work has been complimentary to the EU in the sense that it has been fully privately funded by MGM MediaGruppe München – not a single EU-ECU has been spent on it. And third, our report is complementary to EU reports by not having to portray the full European picture, and by not having to include the specific points of view of European member states – both of which is reasonable and necessary for European institutions. We had the chance to discuss the issues independently of this – and hope that some of the results make stimulating reading.

10 Theses

Some of our readers may want some additional focus in their reading. My first suggestion for this is simple: read the individual texts in the report – we have tried to enable focus at every step of our work. A second suggestion cuts across the texts: I have selected ten theses which are dealt with in one or more of our contributions, and which, of course, are personal selections for a debate which we still have to engage in.

The media revolution in Europe has yet to come

* Multimedia rhetorics suggest that Europe has already been through a new media revolution. Actual media usage in Europe, however, is still quite traditional. In Mid-1996, only between 1 and 2.5 percent of the population used the Internet in European core countries like France, Germany or the UK, compared to more than 5 percent in the US. In terms of competitiveness, this is a problem; on the other hand, it also leaves room for shaping development in Europe.

New European media need new European services

* The US dominance in the field of new communication technologies has led to a "reversal of the colonial complex" (Ulrich Lange): now European decision makers tend to copy the American communication profile rather than to develop it independently based on their own cultural needs. However, European services with European content are developing, using new technological tools creatively to strengthen the uniqueness and specificness of social and cultural variety in Europe. These developments should be supported by governments on all levels.

Telecommunication services in Europe are still too expensive

* The bottlenecks in Europe are not technological – they are economical and political. Necessary deregulation has been artificially delayed. Inappropriate rates set by de facto monopolies interfere with the fast growing demand for online-connections. Deregulation alone will not solve these problems. The integrated approach of broadcasting and telecommunication regulation in the US should be a model for Europe, not to be emulated in detail, but as a source of inspiration.

The traditional Internet will implode

* The Internet was not built to incorporate all the new services which have been created for it since. If the Internet is to be used for telephony and even to listen to the radio in future it will implode. New backbones, new overlay-networks, Intra-Nets and new pricing mechanisms are emerging and will modify and replace the traditional Internet step by step.

Axel Zerdick

A new European Extranet is needed

* Europe should take this opportunity to build a strong Pan-European infrastructure of its own. If more and more people try to explore the world of the Internet, the only chance to ensure a high performance network lies in a suitable design of a new network with a reasonable balance of regional and international traffic. The traditional Internet creates too much international traffic for local information desires. The European Community should invest in new mirrored Internet servers and decentralised databases with local, regional, national and international content, to ease and to speed up online usage in Europe.

The market potential of Multimedia is not limited to media budgets

* Spending habits in existing "media" categories by definition cannot be a proper guide to estimates for expected spending on new ones. The constraints of the audiovisual and media expenditure concept are obvious when looking at the most successful innovations of the past few years: Personal computers in private homes, as well as equipment and services using the Internet, have not been paid for from 'media' budgets, and most likely not even by any 'budgeted' part of household or personal expenditures.

There is a future in television beyond 'interactivity'

* New electronic media have more to offer than just simple mechanisms to distribute and to select from a broader variety of traditional products. The desire of TV viewers in Europe to interact with their screens is overrated, whereas the wishes of a new generation to get interpersonally involved and connected is not yet understood. Communication without dedication is like knowledge without inspiration.

Multimedia technologies can not solve all employment problems

* In terms of economic expectations, multimedia technologies carry the heavy burden of unrealistic growth and employment promises. Rationalisation and "self-service"-developments will continue to erode the basis for employment; slow development of multimedia technologies and services, however, would reduce potential positive effects. Enhanced products and value added services – including those of the multimedia industry, but also in other service areas – are the fields in which new markets and new employment opportunities are emerging.

Consumers will need protection against abuse of micropayments

* People need and have a right to control their budgets and not to lose track of their spending in a flurry of 'micropayments' for new and old services. European politicians should protect their fellow citizens from the emerging dangers of a new virtual bankruptcy.

New media are a chance for new entrepreneurs

* Not media giants but unexpected newcomers and 'nobodies' have developed important segments in the present field of multimedia communications. The traditional media industry is facing additional entrepreneurial uncertainty: It is not yet sure what viewers will want to see, it is not clear which services consumers will use, it cannot be said today which offerings will be accepted. Alliances to share potential risks will not be sufficient to stabilise the present influence of traditional media companies.

Philip Schlesinger, Alessandro Silj, Percy Tannenbaum, Axel Zerdick

Emerging Issues

Philip Schlesinger Axel Zerdick Percy Tannenbaum Alessandro Silj

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Earlier positions include assignments for Euratom, Brussels (1960-65), research at the Center for International Affairs, Harvard University (1966-68), member of the Work Group on New Communication Technologies, the Ford Foundation, New York (1970-73), Trustee of the International Institute of Communications, London (1985-90), rapporteur at the Assises de l'Audiovisuel in Paris (1989). Publications include numerous books and essays on international affairs and on communications, e.g. The New Television in Europe (London: John Libbey, 1993).

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Academic training at McGill University in Montreal, Canada (B.Sc., 1948) and the University of Illinois (PhD, 1953). Professor of Communication and Psychology at the Universities of Illinois (1953-59), Wisconsin (1959-67) and Pennsylvania (1967-1970). 1970 move to Berkeley as Professor of Public Policy and Director of the Survey Research Center. Publications include several books and some 110 articles. Over 200 invited lectures and several honorary positions at institutions in North America, Europe, Australia and East Asia. Consultant to various government, business and academic institutions.

Challenging the Techno-Hype

The centrality of communication technologies in our everyday lives can hardly be doubted. Nor can their crucial importance in the continuous renewal and reinvention of how our societies work. However, while claims about what the "information society" can offer us in terms of prosperity, abundance, pleasure and democracy abound, we need to take a hard look and try to distinguish between the feasible and the fantastic.

Almost inevitably, the introduction and development of new technologies is accompanied by a high volume of hyperbole. Techno-hype has come to match political hype with regular pronouncements of forthcoming findings and discoveries, of new equipment to attend to most of life's chores, of coming cataclysmic changes in work habits, leisure time, perhaps even patterns of sleep. Clearly, experience has taught us to take most exaggerated claims with the traditional grain of salt and to maintain a proper sceptical approach.

Experience has taught us to take most exaggerated claims with the traditional grain of salt

There are good grounds for this, as the history of technological developments in the communication field, as in most others, is led by initial misconceptions and thus is perhaps as much a history of failure as of success. Probably more inventions or innovations have gone down the drain than have survived. Even with successful innovations – e.g., the telegraph, telephone, radio, etc. – the envisioned purposes were not realised but replaced by other uses that emerged from experience with the new appliances. But as successful technologies progressively revolutionised the habits of the modern world, the non-starters have quietly vanished, and we tend not to register the catalogue of failures.

Changes in patterns of use have come about when large numbers of people have adopted new equipment and services as replacements for older ones or by accepting totally new technologies for their established behaviour. It is one thing to invent and produce new technologies, but adoption occurs only when people really want or actually need them. Producers try to do this by marketing enhanced, advanced, or even totally new devices and procedures, only when there is a broad based recognition of genuine added value.

Adoption occurs only when people really want or actually need new equipment and services

A good example is the so-called "picture phone" which has been offered repeatedly since the early 1960's as a promising application. But each test trial has proven unsuccessful, mainly due to evidence of inadequate demand because people could not perceive enough added value. With the still newer technology of signal compression on tap, such trials may re-surface yet again, so we may not have heard the last from this front.

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High Definition and D2 Mac) are still on the back burner, as is digital broadcasting. Interactive television (based on the digital format) still has an uncertain future because it may conflict with, rather than enhance, the essential story-telling, entertainment role of television which is one of its main appeals. Video-on-demand is another highly touted benefit in the offing, but has yet to demonstrate its advantages over video rentals in a number of tests to date, and there are some reasons to expect that it never will.

Such examples of the failed promises of techno-hype are numerous but, before we "throw out the baby with the bath water" we must also admit to a long list of obvious successful innovations (e.g., the VCR, CD, personal computers) where the hype turned out to be true. There is a tendency in some quarters to propound anti-techno-hype with the same intensity as techno-hype, which is probably just as misleading and futile in the long run. The healthy response to both is a proper dose of scepticism and a wait-and-see attitude. No one is forcing us, individually or as a society, to accept any innovation at first mention, hype or no hype. Most of us have learned to use the accumulated, sometimes contradictory experience of family, friends and neighbours before opting to lay down a significant sum of money for a brand-new technological wonder.

Failed promises of techno-hype are numerous, but there is also a long list of obvious successful innovations

Roads to Innovation

Some years ago, a young graduate student at the University of Illinois, while working on a quite different assignment, started "playing around" (to use his term) with designing a means of accessing and browsing the Internet. The result was a research paper that drew the attention of a number of interested parties, along with attendant publicity for such a "discovery". One such very interested party was a private, California-based, venture capitalist who had had a number of successes (and a few failures) investing in new technological developments. That investor placed a telephone call to the inventor inviting him to a joint meeting in California. This was the start of Netscape, which has a share of over 70 percent of the browser market, although it is being hotly pursued by other potential competitors, including mighty Microsoft's own offering. A law suit has been entered to challenge Microsoft's "unfair trading practices". In this competitive battle a settlement, one way or the other, is still some time in the future.

Innovation: the Netscape example

The Netscape case is a good example of the two main ingredients needed to launch an innovative technological undertaking – a novel idea that seems to fit a particular niche in the market, and investment capital necessary to transform that idea into an actual good or service. That transformation process is inherently risky (at least in financial terms) since one cannot be sure that an actual affordable product will emerge within a reasonable time-frame, that the costs required can be reasonably met, and that it will prove to be durable in what is apt to be a highly competitive market.

Without the necessary venture capital the innovation process is just another idea in somebody's mind or on the drawing board. The process of converting that idea into reality requires many hours of designing, engineering, testing and retesting, making adjustments on the go, with ultimate success a hope rather than a reality. Until the product is placed on the shelf and attracts enough customers to warrant all that cumulative investment and effort, success remains uncertain and the possibility of failure ever-present.

Venture capital can make the difference

Someone has to accept the risks and make the necessary investment to get a new enterprise off the ground. As the Netscape example shows, an individual venture capitalist can make the initial difference – in that case with both the inventor and investor being highly rewarded. In time, when the technology appeared highly feasible, a public share offer was mounted (again with considerable hype, this time by market gurus) which provided a considerable amount of working capital. Despite a rather volatile market, characteristic of technology shares in general, subsequent investors have also been well rewarded, at least to date.

In the U.S.A., at least, there has been a growth of venture capital firms specifically to play this role. As expected, these have tended to cluster around high-tech areas such as Silicon Valley, but are spreading to other areas with the growth of a specialised stock exchange (known as NASDAQ) that features relatively low-capitalised innovative companies, initial public offerings, and the like. Specialised mutual funds, focusing on high-tech share portfolios, either with a given industry or across a wider range of technologies, have also promoted a higher degree of public awareness and investment.

Different financial institutions can also play the critical investment role. In many countries, where major banks have large shares in many of the main businesses of the nation, they can act as catalysts for innovation, although large banks tend to be conservative in their investment strategy and generally risk-averse. Specialised investment banks can step into the breech at times, as can public share offers. For a given country to encourage technical innovations within its borders, it needs to create a proper financial infrastructure, one that fosters the presence of such risk-taking venture capital institutions, along with appropriate tax incentives and/or deferments. Without such an infrastructure, states or regional economic actors (such as the European Union) are apt to have difficulty promoting high-tech entrepreneurship, if for no other reason than that incentives need to be provided for the inevitable financial risks.

The financial infrastructure must foster risk-taking venture capital institutions, along with appropriate tax incentives

Not least, local, regional or national governments often play such a facilitating role, as when they seek to develop an "industrial policy" to foster certain developments or, of course, when they already exist as whole or part owners of major businesses. In some countries, such as the U.S.A., government tends to take a more passive role, merely setting up a particular economic infrastructure and allowing entrepreneurial, tax and market mechanisms to create their own risk-taking environment and potential profit structures. To be sure, certain industry

"In the end, it is the selective behaviour of individual households – whether to purchase a product and how it is used – that shapes ... the social effect of any new technology."

groups often intervene to petition governments to act on their behalf, particularly in international trade disputes and agreements designed to benefit specific industries (e.g., copyright and patent protection, open access to their own products and brands in foreign countries, etc.).

The role of governmental institutions: regulation, adaptation and implementation

With some changes in scientific knowledge and technology, the responsible governmental institutions have to get involved in the decision process, including regulation, adaptation and implementation, because major public policies may be involved. Most western countries have agencies and experts who can conduct appropriate policy analysis to evaluate both the benefits and costs of such major national or even international undertakings before they are adopted.

These generally involve an assessment of the legal, political, economic and institutional feasibility of various options for addressing a particular policy issue, with attention to how readily implementation can be introduced and a disciplined attention be given to potential consequences, both readily apparent and unanticipated. Some countries, with a given kind of political structure and a sensitivity to certain risks, may opt to avoid, or at least defer, adoption of any of the available alternatives, while other countries, with a somewhat different set of risk assessments and a more interventionist political, economic and social environment, may move quickly into a major national effort to "take advantage" of some new innovation. These procedures generally include some variation of cost-benefit analysis with, as political life often dictates institutions, major weight given to political expediency and at least a short-term political pay-off.

Consumer Choice

The decision process is not fundamentally different at the level of the individual consumer faced with the choice of whether or not to adopt a new service or product, when to do so, and whether it is affordable in their personal circumstances. Because it is on an individual or family level the procedure involves more personal considerations which are likely to be more sensitive than assessments conducted on the wider level of a firm or a national polity.

Individuals are guided by their personal perceptions of anticipated usage and value

In the end, it is the selective behaviour of individual households – whether to purchase a product and how it is used – that shapes the later technological impacts and developments we tend to focus on when appraising the social effect of any new technology. In many such choices, individuals are guided by their personal perceptions of anticipated usage and value. To be sure, such personal behaviour is often based on the experience of others, the early adopters who serve as the initial test cases (the usual two-stage process of adoption and adaptation). As members of the mass market become more familiar with the newer products, they are in a better position to make their own decisions – although there are no doubt times when the early adopters may provide a misleading scenario for subsequent followers.

Major factor: the family budget

With such advance, if somewhat unstructured, information providing an input on potential benefits, the cost side of the equation has to be decided on a more individual household basis. The major factor here is, of course, the family budget and if funds can be allocated from savings or other budget categories for a new appliance or service. In this process, the second-stage consumers are often the benefactors of price reductions engendered by economy-of-scale savings in the product manufacturing and distribution process, with growing competition among both producers and sellers. Nevertheless there are objective constraints on the family budget and other planning variables for private expenditures that inevitably enter the picture, especially when substantial fund outlays are involved (such as for a personal computer for the home).

Conflicting interests within a family

There are factors other than finances, as well, involved here. For one thing, households are usually composed of more than a single person, so differential perceptions and anticipations of potential value may be involved. While the final decision-making power may rest with one or two individuals (e.g., the parents) the decisions of other household members (the children) will also play a role. A related factor is the individual time budget of each of the family members. Those with established obligations and a full leisure-time agenda may prefer – or may be persuaded to prefer – bypassing a new gadget because it will distract too much time from other required duties and chores. These are the occasions where uncomfortable trade-offs have to be involved, often ending up with the use of a new technology substituting for another, already established time allocation.

The rational selective consumer can also be a more-or-less aware and responsible social citizen

Obviously, apart from individual consumer choices, other social and cultural factors may also enter this process. Some commentators (such as Silverstone in this volume) tend to emphasise a different model in which new types of mobility, domesticity, and interactivity become the primary influences on private home adopters and users. They raise the image of not only the rational selective consumer but also of the more-or-less aware and responsible social citizen. For such cultural theorists, a selection model based on individually atomised decisions, mainly because new technologies offer a greater variety of personal choice, is misleading. Rather, they favour a model where social relations within and outside the household unit and changing cultural trends – e.g., the alleged tendency of the younger generations toward new types of "Gemeinsamkeit" or the desire for more "dedicated" communication experiences (see Lange's chapter in this volume) – become the major determinants of adoption or non-adoption of new devices on the market.

The Value-Added Focus

Decisions at any level – that of the individual household, community groups, business firms or national policy – can vary along several dimensions. But, as we have already indicated, each involves a basic judgment of what, if anything, is the expected value contributed by a new good or service and how it is apt to affect the

existing structure of the social unit involved. That can operate on several levels; while different classifications of each level are possible, the following may serve as a convenient hierarchy for present purposes.

Substitution: Some new technology merely replaces well-established, familiar existing equipment and practices. Obviously direct replacement of one service for another, with no real change in any way, is a futile step so the new technology must offer some benefits, however minor in extent, to be taken seriously. The key question here is whether the substitution is better or cheaper in some way that is significant to the user. Earlier changes in the telephone set provide one useful example. Instead of the standard, black dial set, there suddenly appeared coloured phones with different designs and other different models for office and home were offered at extra cost. The basic technology did not change but the variation in appearance was enough to stimulate significant sales increases. In a short period, this gave way to button units but still with essentially dial technology, and again sales increased. Shortly afterwards, true digital sets were introduced, representing a more substantial technological change, along with the availability of a number of some innovative services, and these made for more substantial sales increases for new sets.

Key question: is substitution better or cheaper

Improvements in quality: Other examples illustrate the value-added nature of relatively simple, essentially substitutive technology introductions, but with more effect. Frequency modulation in radio significantly changed the nature of the radio signal and led to a rise in music listening due to better signal quality. The change to 33 rpm recordings also significantly enhanced the product. Even greater changes in this area were represented by the introduction of audiotape, and later CDs. Like the change to digital telephony, the technology of music reception was not a simple substitution but involved significant improvements in quality at each step along the way.

Better radio signal quality significantly enhanced the listening experience

However, even with simple substitution, as we have noted earlier, there are inherent costs that accompany the change, so that not all people can readily adopt them. We refer here not only to the added financial costs but, for some people at least, the mere burden of change: why do I need something different when I know how to use what I have? The basic approach is not to fix something that is not broken. There is accumulating evidence that for a significant number of individuals – perhaps a minority, but still not an inconsequential number – change, in and of itself, contains some threatening elements and they would rather stick with the established tools and procedures. (Claisse's chapter in this volume offers some relevant considerations in this regard.)

Enhanced services: As noted above, the division between sheer substitution and some improvement is blurred because simple replication carries few if any incentives to change. In terms of the example noted above, such novel introductions as the digital telephone and audiotape represented substantial benchmark changes because they improved quality and the possibility of new experiences.

The evolution of television

This is seen even more dramatically if we examine the evolution of television. To begin with, television in itself offered an entirely new dimension to home entertainment and enjoyment, which was probably a main reason it was so readily adopted and spread so rapidly. America, with its larger affluence and zeal toward entrepreneurship, jumped into the medium early (in the late 1940s and early 1950s) but paid a price because the then available technology was relatively primitive. By the time European countries began broadcast TV, with developments delayed by World War II, the available technology had improved and they have enjoyed better signal quality ever since while the U.S.A. has been stuck with poorer signal quality because it had invested too much too early.

The introduction of colour television

A major innovation everywhere was the introduction of colour TV as a replacement for black-and-white sets. The initial cost differences were very substantial and colour did not catch on for a while. But, as the obviously enhanced appeal of colour programmes became apparent, as economies of scale lowered pricing, and, not least, as families had to replace their existing high-repair-cost older sets, colour sales zoomed. The change from old failure-prone vacuum tubes to electronic systems provided additional, even greater value-added improvements.

Cable TV: the next significant step in development

Cable TV represented the next significant step in development. Actually available (again, in relatively primitive form) in the early days of TV broadcast (to pull in signals from the metropolitan centres that had TV stations), cable TV appeared early and spread quickly, especially in places like Canada, where the vast majority of the population could be exposed to U.S. programming, thus offering a fuller menu of programmes.

Various countries, the U.S. included, had serious misgivings about introducing cable TV on a large-scale basis. This was due in part because of the power of the vested interests in broadcast TV (in both public or private systems), and in part because of a real or imagined fear that more TV availability was not good for the public welfare. This concern is particularly acute in the case of children, supposedly addicted to the boob tube, and hence representing such a vulnerable audience. Among other things, it has led to the introduction of so-called V-chips within the U.S. that parents can use to block out certain content from their children's viewing.

More recently, cable TV has experienced major growth for the simple reason that it has provided more channel capacity and hence supposedly greater diversity of offerings, in systems when there was relative scarcity and limited space in the spectrum. Cable TV does cost more but, apparently in countries like Canada and the U.S., the majority of the population (some 70% in the U.S. and over 80 % in Canada) feel it is worth the added price ($25 – $30 or so per month on the average) even though the expected pluralism in programming is still not all that evident.

"Curiously enough, in the case of high-definition TV, the U.S. originally departed from its usual policy of letting the entrepreneurs and the market adjudicate the process."

High-definition and/or digital technology in television involves substantial new investment all along the production-dissemination-reception chain

This raises some rather interesting questions about the next promised significant change in TV broadcasting with the forthcoming introduction of high-definition and/or digital technology. These changes involve substantial new investment all along the production-dissemination-reception chain, and is not – at least not yet – such an assured improvement that the parties involved will make a sufficient initial investment to ensure that it has the chance to take off. Curiously enough, in this case the U.S. originally departed from its usual policy of letting the entrepreneurs and the market adjudicate the process. Instead it set up a special commission – along with a special testing laboratory – to investigate the matter in detail and to decide (actually only with the power to recommend) which of the various competing systems should be adopted.

After extensive testing and deliberation, the commission issued its recommendations: 1) that only a digital system be considered (thereby eliminating the existing Japanese HDTV system); 2) that both digital and analogue systems should be available, either on a coordinated or parallel basis, so that viewers without new sets not be disenfranchised (the same as when colour was introduced); and 3) that since no single digital system was judged superior to the others at this stage, potential developers be encouraged to form a consortium or new company to develop a single system and single standard.

FCC decision: a delicate compromise

The decision to go digital naturally attracted the interest of electronic chip and computer companies who argued vigorously to make the competition more open. The latest version (at the time of this writing, in late December 1996) shows a delicate compromise on single technical standards for both TV signals and CD quality sound, and an open environment where broadcasters, consumer electronics, chip and computer manufactures can compete, and allow the marketplace to decide which might succeed and which might fail. There is still much to be done in this area, of course – for one thing, the Federal Communications Commission must set aside part of the public airwaves for the new service and must issue new digital TV licences – and the announced target date of 1999 for initial broadcasts may just be more techno-hype. But clearly some headway has occurred, at least in America.

While some of the promise of digital TV is in new services, such as in interactivity and video-on-demand, the main decisive factor is apt to be whether signal quality is sufficiently improved to warrant the very substantial outlays of money involved by all parties. That introduces the additional important factor of whether the creative community is capable of coming up with new programming genres that will take proper advantage of the new digital technology. If we use the present cable TV programming schedule (in the U.S. at least) as a point of departure, it is estimated that anywhere from 60 percent to as high as 85 percent of available programming will not be significantly improved by the new technology. The challenge then is whether new types of content, designed specifically to exploit digital

"Had the Internet been planned beforehand as a larger global service, it would still be going through dozens of national and international commissions."

The challenge: a new breed of producers who understand and appreciate the value-added potential of digital systems

technology, can be produced to create a new demand of its own. That is probably up to a new breed of producers who understand and appreciate the value-added potential of digital systems, and whether such a community will emerge in time to stimulate the early sales which will set the pattern for later larger adoptions.

The Internet

The Internet is a most interesting and unusual technological innovation. It was largely unplanned to reach its present level, it remains without owners as such, and is still largely unregulated – at least so far. It is probable that had it been planned beforehand as a larger global service, it would still be going through dozens of national and international commissions, each eager to put their own stamp on its development, extracting one thing or denying another. While there are inherent conflicts to be fought out between open access and government-motivated activities (e.g., allowing pornographic materials, fool-proof encryption, government eavesdropping) the Internet seems here to stay, although perhaps in somewhat different formats (e.g., a growth in *Intra*net, rather than *Inter*net, activities).

One necessary readjustment: a new set of copyright protocols for the digital era

Any such large-scale development is bound to raise a variety of problems and readjustments, not the least of which is a new set of copyright protocols for the digital era. Again just as our manuscript deadline approaches, there is news of an international agreement among some 160 nations to extend copyright protection for print, art, software, and music to the Internet after a contentious round of sessions in Geneva. The various treaties agreed upon may well set the cornerstone of international economic law for the information and technological age of the 21st century, but we have not heard the last word on this matter.

The main stumbling block may be that such international agreements must now be approved by each of the national bodies before they can be implemented. The chapter by Jens Gaster presents the problem facing the European Union, and the U.S. congress recently decided not to decide on a national, let alone international, policy because it could not resolve the competing demands (each reasonably justifiable on its own) from the various involved constituencies – mainly between the hardware and software providers – each with important stakes in any final agreement.

The political role of the Internet

At the same time, a political drama is being played out on the streets of Belgrade, Serbia. As protests against the government's decision to cancel the results of recent local elections (which tended to go against the ruling regime) were mounting in the Serbian capital, the government saw fit to squash the growing dissent by controlling all media reports of the protest marchers, including the shutting down of major radio stations. Along comes modern communication technology to the rescue: the protesters took to the Internet to spread their demands elsewhere in Serbia and to the outside world.

The Economic Dimension

Whatever the technological base of new technologies, whatever their uses and applications may be, they cannot be developed and produced without economic reason coming into play. While the people and companies who create the products and services of the digital economy may be motivated by fascinating technological concepts and specific ideas of their potential usefulness, at least part of their motivation, and quite certainly most of their staying power, has to do with basic economic facts: an income is needed to stay in business; a decent profit to sustain development and growth, and of course a big success will mean big money. (Bill Gates probably is a case in point: while he is less admired for the ingenuity of his software concepts or for the superiority of his company's products, it is his skill in marketing and in creating a fortune for himself that is a major basis for his present status.)

Three levels of economic incentives

Information and communication technologies have been and still are important factors in any country's military security. Government spending thus has provided the economic basis for many basic technologies in these fields. To the extent that these technologies and services are spinning off into the realm of everyday civilian life, extending into and converging with old and new media functions, the economic emphasis is changing. Government spending is driven mainly by the usefulness of applications within administrative processes or by considerations of more general concern like health and education and in terms of industrial and employment policies. Companies may or may not adopt new technologies because of their perceived effectiveness in streamlining production and improving the quality of products; some new services have become possible only by these technologies, giving rise to new companies, even whole new industries. As previously discussed, consumers may be the most elusive lot: their demand is determined not only by their budgets and their spending habits, but also by the perceived added value of any new offering, and subject to unpredictable subjective decisions. To manage and influence such decisions, of course, is the role of marketing.

Three areas of demand: governments, companies, consumers

In terms of economic expectations, information and communication technologies carry a heavy burden. During the last decade, "New Media" and later "Multimedia" have been the focus of expectations raised by companies, industries and governments in many countries. Reduced growth and rising unemployment create problems within industrialised societies that can no longer be overcome, not even sufficiently reduced, by traditional economic policies. Quite understandably, the market potential of such new concepts has been looked upon optimistically by those companies convinced of the attractiveness of their present and future offerings. Understandably too, but with less assurance, governments have seized the opportunity to create and nurture the belief that new technologies can solve employment problems in the near future. For Europe, as many as 15 million new jobs in this area have been predicted, and even a somewhat more serious

Corporate and political hype on employment

"Predictions of media budgets meet a conceptual dilemma: spending habits in existing product categories by definition cannot be a proper guide to estimates for expected spending on new ones."

study expects five million new jobs within the EU by the year 2000. Again, hope and hype may be getting intertwined, and the ultimate success of these new technologies and services may be endangered more by such euphemism and false optimism than by anything sceptics and critics can say or do.

Careful analysis of the economic potential is sobering, but certainly not pessimistic

The chapter by Schrape and Seufert carefully analyzes the economic potential of new multimedia technologies in terms of market segments, growth and employment. In this field, the inadequacy of comparable statistical data within Europe has been a particular shortcoming; there should be more and better coordination of the kind that just has started between Eurostat and other agencies. The results of their analysis are therefore based mainly on the existing statistical framework that has been set up for Germany. These results are sobering to different degrees and to different expectations, but are certainly not pessimistic. Particularly for the growth and employment argument, it has to be kept in mind that there is an unavoidable systematic bias ("systematic asymmetry" in Zerdick's terms) in trying to balance negative and positive effects. Those mature products and industries most likely to suffer from substitution by new technologies are well known and relatively well documented in statistical terms, and as a consequence the negative effects are relatively easy to predict. On the other hand, new products, new services and new industries are harder to evaluate, and any prediction of their development must be regarded as relatively frivolous in comparison to that of more mature parts of the economy.

The media budget approach is insufficient, and the personal computer is the best example

Looking at the potential development of consumer markets, discussion has largely been focused on what is called "media budgets" and their development. In the "Facts and Figures" section at the end of this volume, there are some useful data on media expenditures, particularly those on audiovisual products which seem to be closest to new media in terms of their uses, and thus constitute their potential competition, as well as substitutes. These figures demonstrate a conceptual dilemma: spending habits in existing product categories by definition cannot be a proper guide to estimates for expected spending on new ones. More precisely, they can only do so to the extent to which new products and services are no longer "new". The constraints of the audiovisual and media expenditure concept are obvious when looking at the most successful innovations of the past few years. Personal computers in private homes as well as equipment and services using the Internet have not been paid for from "media" budgets, and most likely not even by any "budgeted" part of household or personal expenditures. Rather, they were probably paid for from other unbudgeted parts of disposable incomes, maybe competing with (and possibly substituting for) other gadgets, cars or travel. There is an optimistic note in this enlarged concept, but with our now familiar caveat: new products and services must be sufficiently distinctive, must have added value for the customer, should catch the imagination and fascination, or at least have "option value" in the sense that they offer potential choice.

We have already noted that competition for consumers is a function of disposable income and willingness to pay and of "time budgets" for media and other different activities. An additional factor seems equally important : given that users do invest time in media consumption, there is growing concern in the industry that parallel activities as well as the actual zipping between and the zapping of programmes reduce the effectiveness of advertising, not to mention that of editorial content. This third level factor thus is essentially a matter of competition for attention.

Three levels of competition: money, time, attention

As Noam notes in his contribution to this volume, there is an interesting theoretical framework to explain competition for attention as well as potential strategies to cope. When the increase in information generated by various media exceeds the human potential to deal with it – "information overload" has become a conventional term to describe this development – something has to give. A useful concept borrowed from formal "information theory" focuses on the difference between those parts of the message which are useful to the consumer (i.e. genuine "information") and those other parts without relevance to the individual consumer's needs and/or interests (so called "noise"). Several strategies to cope with both information overload or noise have been suggested, for instance, selectively shutting off attention by "closing and specialization", splitting attention by "multitracking", or focusing attention on those elements of the information flow that are filtered out by (or left over from) automatic screening processes characteristic of the human brain (or performed by software search routines).

How to cope with information overload

The economically most interesting strategy, however, has to do with pricing. Television and the Internet are commonly perceived as basically free services. In the case of television, indirect and collective forms of financing (advertising and the mandatory licence fee) prevail in Europe, making additional use by any individual consumer virtually free; in economic terms, "marginal costs" are zero. In case of the Internet, most of the infrastructure has been set up in previous years by companies and by governments for originally different purposes, whereas most of the content is provided either by the users themselves or by companies and government institutions as part of their public relations efforts. In many cases the people who use the Internet (young people in families, students, employees) are not those who pay the telephone bill for Internet access (parents, universities, companies). It is not surprising, therefore, that the real cost of the Internet is largely underestimated by its users and its proponents, and that some of the overload problems of the system can be traced back to the perception (and in some cases the reality) of a free service.

Television and the Internet are commonly perceived as basically free services

Introducing and strengthening pricing mechanisms both in television and on the Internet will have three effects in economic terms. First, price differences will – as in other consumer-oriented industries – provide orientation and help decision-making, thus likely leading to a reduction of information overload. Second,

Three effects of pricing mechanisms

following the example of traditional media, some new services will be geared to providing screening and navigational functions (rather than additional content as such), thus creating new business opportunities. Third, the unavoidable exclusion of those people unable to pay may well stimulate public debate in some countries on which television content, what kind of Internet access and which services on this system are crucial for the functioning of a democratic society. This could lead to some sort of "universal service" regulations, and to governments subsidising certain types of content and/or paying for the use of multimedia by the poorer segments of the population – again creating some new business opportunities, and some new material for welfare economics.

All of these potential developments will be shaped mainly by the strategies of individual companies, as well as alliances between them, and by regulatory and other government decisions regarding the multimedia industry.

Strategic Alliances

Tendencies toward convergence have blurred borders between sectors

In recent years, we have witnessed a flurry of takeover partnerships and merger activity between and within different sectors of the telecommunication industry. Such tendencies toward convergence have blurred borders between sectors, as when telephone companies position themselves as providers of images and information, or when broadcasters move into the business of new services, and when publishers run satellites. In this context what are the appropriate reference points and criteria for European media groups and telecommunication companies to map their strategies?

In the past, many broadcasters would also position themselves as producers and distributors (as when Canal+ produced their own decoders and, of course, programming). Cable operators or film producers would also buy shares in, or take a direct role in, the management of broadcasting companies, the logic of such strategies being the supposed economic benefits of vertical or horizontal integration. Synergies and economies-of-scale were to compensate for the cost of such investments, at least in theory (in practice they often turned out to be quite negligible). Today, convergence poses new challenges. To the broadcaster who moves into production, production is not an unknown land. But the broadcaster or publisher who moves into on-line services will need to work with techniques which bear no resemblance whatsoever to the ones they used in the past. Furthermore the potential market will be determined by the number of outlets (personal computers), a factor outside their control unless they are prepared to invest in the computer industry and/or to become themselves operators or co-operators of on-line services.

Convergence poses new challenges

Until now, broadcasters have used on-line services mainly to experiment with new marketing strategies and to interact with their audiences (CNN, for instance, has used CompuServe to test audience response to one of its programmes).

"Occasionally (probably more often than one might suspect) other more subtle factors may play a major role, but their influence is hardly ever acknowledged."

New challenges to broadcasters

Although the role of providers of content will continue to be by far the most congenial to the broadcasting industry (operators of on-line services need high-quality materials such as entertainment and news that would appeal to the public in order to promote their subscription campaigns), today other actors are calling on the broadcasters to play a more direct role in the telecommunication market. Hence, for instance, the alliance between Microsoft and NBC to produce a cable TV news service and to develop off-line products.

In a rapidly changing environment of convergent sectors and interests, various telecommunication companies have emerged as the most determined actors in this new global strategy: MCI/BT, Sprint/Deutsche Telekom/FranceTelecom, AT&T/Unisource, IBM/STET, BT/Mediaset/Albacom are some of the mergers and alliances that are changing the map of the world's communication industry. One of the telco's assets, and one that can be specially appealing to many of their partners, apart from their financial resources and control of telematic networks, is their know-how in the management of large numbers of subscribers.

As for broadcasters, their appeal to potential partners or buyers is unlikely to diminish in the near future, especially since they are now able to move into production and their weight and influence are apt to increase with digital television. Advertising revenues are another strong asset. Furthermore, broadcasters appeal to potential buyers not only as producers of entertainment, but also as distributors, at a time when distribution is perceived as the weak component of the new multimedia markets. Indeed this was one of the reasons why Disney invested $19 billion in Capital Cities/ABC.

Main factors pushing toward joint ventures

Apart from any other motivations, risk sharing, the size of the capital available and the experience needed to enter new markets, the uncertainties concerning the production and marketing of new technologies are the main factors that push toward joint ventures. Deregulation is another factor (for instance, without it, Disney could not have acquired ABC in the U.S.) . It can also be a factor acting in the opposite direction: it has been argued that because of the more-or-less imminent end of monopolies (regional or national) in the telecommunications sector, or due to the uncertainty about future regulation, mergers are a defensive or preventive strategy to limit the damage that forthcoming changes may cause. As an analyst put it, commenting on the BT/MCI deal, it is "actually (like) a bit of seatbelt-fastening in advance of a bumpy flight".

Occasionally (probably more often than one might suspect) other more subtle factors may play a major role, but their influence is hardly ever acknowledged, simply because they would not fit into any rational choice theory or market research practice. These latent factors can have different names ("strategic insight" is one) but, in the end, what they amount to, basically is intuition and informed guess-work. Asked to identify their strategy, a senior manager of a large European media company recently commented (in private) about their investment policy on the following lines:

Strategic insight vs. guesswork

'We look at the range of available options and make rough estimates of how much each would cost us. More importantly, we look at what our competitors are doing or may be doing. Then we play with "scenarios", and, naturally, if a decision is taken, we would dress it up with the kind of prose our board likes to read, figures, graphs, etc. and quotations from outrageously expensive consultants" reports. However, in the end, our decision on what to do or not to do is based more on intuitive guessing than hard analysis. We may decide to put chips on several options at the same time, hoping that one at least will turn out to be the good one, and in the meantime we continue keeping an eye on other players' bets. But, mind you, in order to play this game one needs money, lots of money".

Under the circumstances, in a field crowded with so many different, heterogeneous actors, it is hardly surprising that many joint ventures look like "odd couples". It may be too early to say, but the question can be posed as to whether these strategies are here to stay or whether they represent a transitional stage, dictated by the high degree of risk involved and the level of investment required in a market whose developments are still far too unpredictable. Presumably, many joint ventures will need relatively long running-in periods. When mergers involve companies from quite different sectors, with management and organisational structures from different cultural and managerial traditions, and different market experiences, difficulties are bound to arise, and in some cases, may lead to eventual de-mergers.

Difficulties with mergers: different industries, different cultural and managerial traditions, different market experiences

The Role of Public Service Broadcasting

In this global environment, public service broadcasters (PSBs) are also confronted by new challenges. At the same time, however, their financial resources and experience should allow them to play a major role in the shaping of future markets. In most large European countries PSBs retain audience shares of between 40 and 50 percent (the range is from 37% in Spain to 77% in Denmark) and in 1995 they represented 56 percent of the total turn-over in the entire European Union television sector. They invest $10.5 billion every year in original production, according to European Broadcasting Union sources.

Might new digital services change the very nature of Public Service Broadcasters?

The main policy issue on the agenda of PSBs today is the extent to which they should become involved in new digital services and whether any such involvement – which would necessarily turn them into commercial players in a highly competitive market – might change the very nature of their role as public services. Private broadcasters contend public service involvement would represent a form of unfair competition on the part of broadcasting organisations that are funded either directly or indirectly by the state. This is essentially the same argument being used to challenge the right of PSBs to move into advertising. Others have argued that public service broadcasters should not feel immediately threatened by the new media as it seems likely that terrestrial television will retain the majority of the audience for quite some time to come.

The European Perspective

The role of the EU in communications

Clearly the potential role of the state in shaping telecommunication technology development is a major one. In the European context this is complicated by the emergent proto-state status of the European Union alongside that of the continuing formal sovereignty of the national member states, and the European communication space needs to encompass both political levels. While the EU does not yet behave like a state, it does have considerable, and growing, competencies in the field of communication. While still not a strong political power centre, and therefore not a coherent political actor on the world stage, this drift of powers to the supranational level is increasingly affecting what can be done at the national state level, and at the regional level. These tensions have surfaced, in recent debates, on the issue of "subsidiary" – the question of at what level inside the EU decisions should most appropriately be taken and implemented.

Traditional roles of the national states in communications

In contrast to the relative novelty of the supranational space occupied by the EU, the role of the national state in the field of communications is hardly new. Consider, for instance, the part that state action has played historically in forming and/or in regulating a range of communications infrastructures, in shaping cultural policies, in structuring telegraphy and telephony, in promoting and using the cinema, in designing broadcasting systems and, continuing a centuries-long tradition, in devising legal instruments affecting the functioning of the press. It is only relatively recently – in effect, since the deregulatory wave of the 1980s – that telecommunications have disentangled themselves in most countries from the status of a public utility. Media and communications technologies and their market conditions have been, and continue to be, deeply enmeshed with the fact of statehood, whether this be in the increasingly rare form of public ownership or, now more commonly, in the shape of regulation in the public interest.

The role of the state in communication needs to be placed within a number of other contexts which tend to fade into the background when economic and technological competition questions are placed centre stage. It is these concerns – interacting with political systems – that have latterly received attention in the reshaping of the communications environment.

Perhaps often forgotten, but nevertheless fundamental, is the role of the state in national security – in policing the boundaries of the national territory; in determining who are the friends, who the enemies; in monopolising and controlling the legitimate use of violence in a given society. Communication is profoundly linked to this national security function. This has been most clearly seen in the United States where numerous communications technologies – e.g. satellites, supercomputers, the Internet – have been developed within the orbit of the defence and national security structures of the military-industrial complex.

Because the EU does not yet constitute a single, unambiguous, security order with a common foreign policy, communication and security policies are largely

Communication and security policies are largely left to the individual states

left to the individual states. Perhaps the Schengen Agreement – which has created a common space for freedom of movement between some EU countries but, at the same time, made the common external border less permeable – has gone some way towards institutionalising common patterns of discrimination between the home-grown and the alien, but obviously not yet enough to dislodge significantly the profound connections between national territory and national communications.

Communication is a fundamental feature of the democratic order

The national security role plainly intersects with the broader political role of the state, that pertaining to the type of regime within which we live. In the integrationist framework of the EU all the constituent regimes claim to be democratic, in that all have forms of representative government and constitutionally safeguard the fundamental human rights of their citizens – rights of assembly, free expression, dissent, and so forth. Communication is a fundamental feature of this order, most obviously so in terms of the place attributed in democratic systems to a free press and to public service broadcasting in enriching and enlivening a political culture of open debate. But questions of freedom of communication do not stop with the mass media as usually understood. Increasingly, they are also addressed to the newer communications technologies and the extent to which these interact with conceptions of fully-functioning citizenship in an "information age". Thus, questions of wider communicative democracy may also pertinently arise in relation to public access to the means of communication, whether this be to have certain minority views represented in the media, or a right to reply to comment on news reporting about individuals or groups, or whether this relates to the disposing of the necessary cultural competencies to make use of innovative information technologies.

Intervention to encourage cultural diversity

The political role of the national state in recognising internal differences and creating the necessary conditions for the diverse expression of distinctive interests – what is commonly referred to as a framework of political pluralism – is closely related to the expectation that the state protect diversity based in cultural differences – e.g., ethnic distinctiveness, linguistic particularity, or regional specificity. It is not uncommon for such differences to bring about markets based in like-minded publics that, once they have been constituted as audiences, may sustain a diverse pluralistic media. Moreover, there is some scope for intervention, such as that undertaken by the EU and by some member states, in encouraging the capacity to broadcast material in lesser-used languages or for the creation of opportunities for ethnic minority media.

In this regard, one pressing problem, addressed in Paterson's chapter, is how the potential contradictions between the economic imperatives of communication and cultural diversity might be constructively addressed. There can be no doubt about according a necessary importance to economic factors (as a field of competition for European enterprises in a global economy) but at the same time assigning a value to cultural considerations as comprising a domain that has econ-

omic consequences for enterprises and for states, but is not in itself reducible to pure economic interests.

Arguably, the drift of EU policy in the past few years has been to privilege the making of an information society in which the needs for communication will be met by taking individual demand expressed in the marketplace as the basic measure of worth. This has been particularly evident in the vision embodied in the recent Bangemann Report, which somewhat crudely combines the creation of the necessary conditions for a world of "European champions" in media and telecommunications with clearing away the clutter of continuing difference rooted in the varied European cultures. It is based upon thinking of a single European market as a purely – or at the very least, predominantly – economic institution where barriers to entry and frictions need to be minimised in the interests of European competition on the world stage.

The drift of EU policy in the past few years has been to privilege the making of an information society

This represents quite a significant shift from late 1993, when the EU appeared on the scene as a relatively coherent political and cultural actor during the concluding moments of the GATT negotiations. Organised to defend the "cultural exception" of audiovisual products, the EU (perhaps willy nilly) went to bat for a different agenda – that of seeing the culture of the moving image as a value in its own right, not just as a profitable business.

It might justly be held that a defensive conception of European culture (based in subsidy and quotas) is not for long going to hold the line against new technological developments in the field of communication. Nevertheless, it needs to be recognised that, at this juncture, the European market (just like every market) is a social institution, not solely a matter of economic exchange. It has been built by deliberate cooperation between the European states and it is shaped in part by the particularities of their peoples. There are frictions and resistances to any exercise that conceives of Europe's communicative space purely as a market. These are rooted in the historical patrimony of cultural differences mediated, above all, by the very national states that comprise the European Union. So clearing the clutter of culture is no easy matter; it is tantamount to surrendering the union's identities that make up the European mosaic. For the present at least, it is impossible to think of Europe either as a monoculture or as a culturally neutral space. Of course, this may well change over the long term, as the EU's citizens begin to develop an identity of themselves as "European", in contrast to the nationals of given states that largely monopolise their loyalties.

Frictions and resistances are rooted in the historical patrimony of cultural differences

"For the present at least, it is impossible to think of Europe either as a monoculture or as a culturally neutral space."

Differences of emphasis in the views expressed

The above pages have reflected the deliberations of the European Communication Council at meetings held over the past year. As they are the outcome of an unresolved debate that still continues it would not surprise us if the reader were to detect differences of emphasis in the views expressed. For instance, we have grappled with the proper roles of market and state in the media economy, the point at which public policy concern becomes relevant, the value that should be assigned to entrepreneurship and consumer sovereignty and asked what may be some of the most pressing priorities for communications in Europe. If we have not been seamlessly univocal in our introductory remarks, we have nevertheless provided an accurate account of the issues debated.

We move now from this collectively authored opening chapter to those offered by authors who may speak quite unequivocally, and unabashedly, for themselves.

Economic Perspectives Summary

Abundance and Bottlenecks

The dawn of the "multi-media" age has both huge potential and enormous drawbacks – for providers as well as consumers. According to Goldhammer and Lange, the media are undergoing a process of "privatisation" in terms of content production. They believe that from TV talk shows and "video diaries" to call-in talk radio and online chat groups the professional use of content provided by private people has not only led to a broader scope of topics, but also to a more banal range of subjects.

Compared with developments in television, Goldhammer and Lange argue that the Internet seems to be "the next step" towards more involvement and participation of the user, though the potentially fatal hurdle of system overload lies not too far down the Information Superhighway. They say the slowness of data-distribution on the Internet is more than a set-back: it could potentially hinder any mass appeal. "The WWW as an acronym for 'World Wide Waiting' is not only a bad joke but a deeply frustrating experience." They warn that the Internet is close to implosion.

For Goldhammer and Lange, those serious bottleneck problems must be solved if the Internet is win broader appeal and maximise its impact. Europe, they warn, is also in need of new tariff structures and more user-friendly Internet interface technologies if the Internet is to grow beyond its current level of appeal to the relatively small number of the technoliterate. The economics of the Internet also depend on the ironing out of such bottlenecks.

Though the "killer application" of the Internet so far has been e-mail, their prognosis is that the next step could see the Internet becoming "the first fully private denationalised trading and exchange system," both for consumers and businesses. However, they caution that while opening opportunities for business around the world, digital cash or "e-cash" could also pose serious threats to the world economy.

As yet, the main contribution of the Internet has been to amplify the exchange of information on a massive scale. For Eli Noam, this development has major drawbacks; the main one being that consumers will begin to switch off, drowning in information overload. For him, the major question is how to process and target that flow. "Almost anyone can add information. The difficult question is how to reduce it."

Noam argues that society has already evolved a variety of coping strategies – either by filtering out media messages, including advertising, by "selective attention, stereotype, even prejudice", or by increasing specialisation.

While Goldhammer and Lange foresee great potential for Internet marketing and new forms of on-line commerce, Noam focuses on how consumers can fight back against unwanted information overload. He has a radical solution: "We are being

inundated by junk e-mail, each piece imposing some time cost to us, yet outside of a price mechanism. Why is our time a free good for anyone who wants to access our mailbox or telephone receiver? Let them pay for access...Individual customers could set different price schedules for themselves, based on their privacy value, and even the time of day."

Noam concludes that the emerging information technology will affect society far more deeply than many believe. "When the automobile was introduced, it was thought of as a horseless carriage. But it did not stop there. Now, our cities, family structures, work and neighbours are changed. The revolution in information transport will have a similar impact that the earlier revolution in physical transport had."

And, just as the arrival of the automobile had a massive impact on growth, employment and mobility, the new information and communication technologies also provide opportunities for growth and jobs. The question is: to what extent?

Schrape and Seufert tackle the complex questions of just how much growth and what kind of new jobs will be created, in particular in Europe. They analyse conflicting studies and balance the over-optimists' predictions with the sobering realisation that for many new jobs gained within new technologies, some others in the "old media" will inevitably be lost. Expectations in political circles (grappling with 18 million registered unemployed in Europe) may well be far too high, as Schrape and Seufert note that the media and communication sector is characterised by continuous productivity growth, so that in future, the same value added can be generated by fewer employees, a development already obvious in telecom, postal and data-processing services.

The sobering conclusion is that – despite predictions of rapid growth – those actually employed in the so-called information sector in 1993 were a mere 3.1% (as calculated by the European Commission), giving lie to the belief that the media and communication sector has already drawn level with the automobile industry in terms of economic importance.

According to Schrape and Seufert, many constraints will affect demand for new media services; for example the political and legal frameworks under which providers must operate, and just as crucially, consumer acceptance of those services. They note the striking differences in Europe alone between the levels of acquaintance with the Internet, PC endowment, and in the acceptance of pay TV. According to their research, "the broadest possible potential acceptance for multi-media goods and services in Germany – at present and in the coming years – applies to around 45% of the adult population".

It seems that Europe's slow but steady steps into the "modem society" are still in their infancy. So, while there's ample reason for optimism for business and consumers alike, many constraints and bottlenecks must first be removed if Europeans are to break through the barriers to the brave new world of multimedia.

Eli M. Noam

Systemic Bottlenecks in the Information Society

Eli Michael Noam

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"As we move from the traditional situation – information scarcity – to a new and unfamiliar era of information abundance, we must be willing to consider new approaches to information. ... If our individual and organisational attention is a limited resource, why should it not be allocated as other scarce commodities are?"

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The Paradox of Information Technology

Sometimes the worst that can happen is to get what one wants. And perhaps this is happening to us with the revolution in information and communications. While this revolution is progressing quite successfully, success, just as failure, has a way of creating its own problems.

We live in the information age, work in the information economy, and are surrounded by an information technology of astonishing performance and price. And yet, with all these technological marvels, we feel less than ever in control of information.

Information Technology paradox: more knowledge but less control

This may be called the Paradox of Information Technology: the more information technology we have and the more knowledge we produce, the further behind we are in coping with information. We invent and build new technologies to help us, but they set us back still more.

Why do we have such a problem? The reason is that we have created a systemic imbalance in the information environment of the kind that leads to new bottlenecks. A communications process, to simplify considerably, consists of three major stages: the production of information, its distribution, and its processing. These three elements have to exist in some relation to each other.

How will we process available information?

In recent decades, technology has made giant strides in the distribution end of information. We are near the point, historically speaking, when the cost of information distribution becomes both negligible and distance-insensitive. Distribution has contributed, in an interrelated fashion, to the production of information, which has been spurred by the evolution of advanced economies to services and knowledge-based manufacturing. One of the characteristics of post-industrial society is the systematic acquisition of and application of information which has replaced labour and capital as the source of value, productivity, and profits. The weak link in the chain is the processing of the produced and distributed information. These bottlenecks are both human and organisational – the limited ability of individuals and their collectives to mentally process, evaluate, and use information. The real issue for future technology therefore does not appear to be production of information, and certainly not transmission, but rather processing. Almost anybody can add information. The difficult question is how to reduce it.

There is a reinforcing relationship between the stages of information: production, distribution, processing. If I produce a piece of information, it will stimulate distribution and use. Similarly, distribution increase stimulates information production and processing. And information production creates demand for still more such production. The relationship between the stages of information with each other and themselves can be summarised in an input-output matrix, in the same way as has been done in the past for the interaction of

industrial production such as for steel, coal, electricity, etc.. Where bottlenecks in growth occur, they are likely to have ripple effects throughout the other stages and beyond.

In the past, the three stages of information grew slowly and more or less in tandem. By sometime following World War II, the parallel trends diverged, and things have never been the same. The driving technologies were advanced by that war – computers (from code-breaking efforts); microwave transmission (from radar technology); satellites (from missile development); and television (from superior electronics).

Imbalances in processing the increase in produced information increase

The production of information in the U.S. economy rose at a rate of about 6%, and the growth rate is itself increasing. Distribution is growing even faster, by an estimated 10% and more. The rate of increase in processing capacity needs to keep up with that. To reach a similar growth rate is very hard, and is not being achieved. It is hard, because of the limited capacity of the processing channels of individuals and organisations, and the difficulty of increasing it.

This has serious implications. Virtually all aspects of society are changing due to that imbalance, and in the ensuing attempts to adjust the individual and social processing rates of information to the demands that growth in the other stages have put on them.

We all know that the quantity of information and of information producers has grown prodigiously. It has been said that 90 percent of all scientists who ever lived live today. The same holds for other information professions such as lawyers, journalists, or engineers. The number of scientists and engineers in the U.S. grew from 557,000 in 1950 to 4,372,000 in 1986, an increase of nearly 800%. By the late 1980s, their numbers roughly equalled the entire information workforce of 1900.

Information output of sciences accelerates exponentially

Most branches of science show an exponential growth of about 4-8 percent annually, with a doubling period of 10-15 years. To get a sense of the trend: the number of chemical abstracts took 32 years (1907 to 1938) to reach one million. The second million took 18 years; the third, 8; the fourth, 4 years 8 months; and the fifth, 3 years and 4 months. If we assume that before 1907 a full million of chemistry articles had not been produced, this means that in the past 2-3 years more articles on chemistry have been published than in humankind's entire history before the 20th century.

A weekday edition of The New York Times contains more information than the average seventeenth-century Englishman came across in a lifetime. The Sunday edition far exceeds that.

For all the talk about "paperless" offices due to electronics, the per capita paper consumption in the United States has increased from two hundred pounds in 1940 to six hundred pounds in 1980. Ten years later, per capita paper consumption had tripled again.

In 1991, Congress received more than 300 million pieces of mail, up from 15 million in 1970. In 1980, 5 billion catalogues were mailed in the United States, 50 catalogues for every person. By 1990, the number was 12 billion. In the 1980s, growth of third-class bulk mail (junk mail) was thirteen times faster than population growth. An average upper business manager received more than 225 pieces of junk mail a month. The number of satellite-delivered channels increased from 4 in 1976, 43 in 1983, to 112 in 1995. This trend continues unabated. In 1992, 20 new programme channels were offered to cable operators, and in 1994, over 70.

The growth of mobile communications provides much wider and more convenient reach in terms of time and place. In the past, one could be reached by phone only near a wireline, which covered in geographic terms only about 2% of the land area of the U.S.. Now, radio-based communication ends most white spots on the map of communications ubiquity.

The quantity of information is most pronounced in big cities. One estimate is that in a metropolitan area like San Francisco, people receive about 100,000,000 bits per capita per year, 100 times as much as in a place like Addis Ababa (with less literacy). The "symbol economy" makes the physical economy look puny. In New York City, the CHIPS communications network transfers $1.5 trillion in financial transactions per day. In London, foreign exchange transactions exceed $100 billion a day. A single day's trading in London is about to exceed the annual GNP of the United Kingdom.

A growing amount of noise accompanying information has to be filtered

A critical point is that information is always accompanied by "noise". In technical terms, noise is the interference in a channel with the primary signal. Noise also includes unwanted information that must be filtered out. The more information we produce, the more noise we produce, too. Conversely, as noise increases (including unwanted information), the filtering must increase, as the information signal must gain in strength. Both activities require substantial resources. Thus, the creation of noise by information affects information, and this is a serious matter.

Shannon and Weaver (1949), pioneers of information theory, identified noise in communication with entropy. This obscure mathematical point gave noise a central role in social analysis. Entropy is the essence of the second law of thermodynamics. It is deeply pessimistic in that it sees the world eventually and irreversibly losing its energy potential and becoming, in Boulding's words, a "lukewarm pea soup." Accordingly, the world would eventually not go out with a bang but with a whimper.

Information as a counter-force to entropy in communication

Entropy uses up the potential of energy and of life. But life's ability to create information and organise itself can oppose entropy. Thus, information is perhaps the one major counter-force to entropy. Society's inability to manage its information resources therefore means that noise increases more rapidly than

"Society's inability to manage its information resources therefore means that noise increases more rapidly than information."

information, and this has many implications on the individual, organisational, and social levels.

To deal with the problem of inadequate processing and the noise it generates, society has a variety of responses and coping strategies. They will now be discussed.

Strategies to cope with information problems like its processing and noise

Response 1: Increased Heat

More information, more noise, and more clutter lead to a need to amplify and/or repeat a signal message. This can be seen best in advertising. Between 1930 and 1990, advertising expenditures per capita in the U.S. increased by over 2,200%, whereas the population increase was 200%. A quarter century ago, the average American was targeted by at least 560 daily advertising messages, of which only 76 were noticed. In 1991, the average American received 3,000 daily marketing messages. Viewer retention (part of processing) of television commercials dropped. In 1986, 64% of those surveyed could still name a TV commercial they had seen in the previous four weeks. But six years later, in 1990, only 48% could do so. This lessened attention leads to an increase in the "heat" of messages, whether in advertising, politics, or the general culture. It also affects media programmes, which also must be more intense. It favours visual themes, simple stories, and pseudo-facts. In politics, it has led to the emergence of the pseudo-event and the 15-second sound bite.

Growing output, but less retention

Increasing heat and frequency, however, do not solve the problem of the processing bottleneck, because almost everyone resorts to the same methods of amplification. Thus, like the onlookers to a parade that are all standing on their toes, we end up less comfortable, with more noise, and with even less processing relative to information.

Response 2: Closing and Specialisation

One way people protect their processing channel is to shield it from too much information by selective attention, stereotype, even prejudice. People tend to notice communications favourable to their dispositions. Voters do not want information but confirmation. Leon Festinger introduced the concept of cognitive dissonance as coping mechanism. John Locke in his Essay Concerning Human Understanding wrote: "Where in the mind does these three things: first, it chooses a certain number (of specific ideas); secondly, it gives them connexion, and makes them into one idea; thirdly, it ties them together by a name." This is done "for the convenience of communication."

Another form of closing is specialisation. As the volume of information rises relative to any individual's ability to handle it, specialisation takes place. There is nothing new about this. Tasks were divided from the earliest days. Long before Adam Smith wrote his famous description of the needle factory, the sons of the

original Adam specialised already, the Bible tells us. As the body of knowledge grew, the evolution of fields of expertise continued into ever-narrower slices. German has an apt term, the "Fachidiot" (Speciality-moron).

Nietzsche mocked it a century ago. "A scientist was examining the leeches in a marsh when Zarathustra, the prophet approached him and asked if he was a specialist in the ways of the leech.. O, Zarathustra,...that would be something immense; how could I presume to do so!... That, however, of which I am master and knower, is the brain of the leech; that is my world!... For the sake of this did I cast everything else aside, for the sake of this did everything else become indifferent to me..."

Selective attention: shielding through specialisation, stereotypes or prejudices

The result: the inexorable specialisation of scholars means that universities cannot maintain a coverage of all subject areas in the face of the expanding universe of knowledge, unless their research staff grows more or less at the same rate as scholarly output, about 4-8 percent a year. This is not sustainable economically. The result is that universities do not cover anymore the range of scholarship. They might still have most academic disciplines represented – whatever that means – but only a limited set of the numerous subspecialities. Many specialised scholars find fewer similarly specialised colleagues on their own campus for purposes of complementarity of work. In other words, the collaborative advantages of physical proximity in universities decline. Instead, scholarly interaction increasingly takes place with similarly interested but distant specialists of similar specialisms, i.e., in the professional rather than the physical realm.

Response 3: Reorganisation

Organisations grow in order to process more information

An organisation transforms inputs – resources, messages – into outputs. Groups, like individuals, have channel processing capacity and points of overload. Laboratory studies also show that decision makers seek more information than they can effectively use. Management studies show that the typical executive can receive and absorb only 1/100 to 1/1000 of the available information that is relevant to his or her decisions. Additional information may actually reduce performance because it increases the decision maker's confidence.

There were hardly any middle managers in the United States before the mid-nineteenth century. But by 1940, managers and clerks accounted for almost 17 percent of the U.S. work force. Their number grew by 45% alone between 1900 and 1910, far outpacing the growth in the general work force. In the same decade alone, the number of stenographers, typists, and secretaries, the staff workers for middle management, increased by 189 percent.

Organisational complexity raises informational complexity

One way for organisations to increase information processing capacity is simply to grow. As information increases, control mechanisms require still more information, leading to excess load and even potentially to general breakdown. An

organisation's response to informational complexity is usually to increase organisational complexity-management layers, procedures, and controls. The result are organisational pathologies, such as tensions between the field and the centre; depersonalised leadership; fragmented understanding; take-over of rigid procedures.

Just as individuals, a group also has upper limits for information processing. The larger the group, the more specialisation and task-sharing can be accomplished, but the greater internal information flows become. For Peter Drucker, the First Law of information theory is that: "every relay doubles the noise and cuts the message in half."

One alleged new tool to enhance productivity in organising is "groupware," such as Lotus Notes, which permits many people to communicate among themselves, both within and among companies. One study (J.G. Miller, 1960) found that teams of four participants had actually a lower channel capacity than single individuals at the same task. In these experiments four people were required to cooperate in coordinating information that appeared on a screen. The performance of two teams levelled off at about three bits of input per second, showing the point at which overload occurred.

Response 4: Automatisation

Automatised quality screening by intelligent agents is still rudimentary

Information screening is the key technological challenge for the information sector. The super pipe requires the super screen. But as everyone who has used a data base can tell, the default part of any existing search system is how to suppress repetitive or unimportant information. That is, one needs a screening by quality. Expert systems and artificial intelligence applications will be useful here, but the technology is not even close at hand, if it can ever be achieved.

Some such systems are "intelligent agents," autonomous and adaptive computer programmes within software environments such as operating systems, databases or computer networks. Typical tasks performed by intelligent agents could include filtering electronic mail, scheduling appointments, locating information, alerting to investment opportunities and making travel arrangements. A learning agent acquires its competence by continuously watching the user's performance and examples, by direct and indirect user feedback, and by asking for advice from other agents that assist other users with the same task.

But all agent technology is rudimentary. The so-called intelligent agents are mainly mail filters. Technology can do only the most formalistic information selection. Humans can infer concepts from the words of a document. Computers are bad at that task. They have great difficulties determining what is important. Contextual analysis will have to advance to the point that machines can comprehend the context of information and its meaning. Technological screening is, at present, quite high in its ratio of hype to reality.

"What is most likely to happen is a shift to a multimedia form of communications with more visual and symbolic information."

Response 5: Multitracking

Growing channel capacities vs. multi-channelling

With rising information inflows, two coping strategies exist to increase processing rates: either raise the channel capacity by technology and organisation, or use channels in a parallel fashion. Electronic information systems can increase channel capacity, especially in transmission. But biological and social systems of humans cannot increase their channel flow equally dramatically. This suggests the multi-channelling of information. Media have different rates of display and absorption, for different types of information and different senses. One strategy of information processing therefore is to affect the way information gets presented. Eyes can get visual information at a broadband megabit rate. In fact, if the TV action is too slow, one gets bored. On the other hand, written information gets absorbed at the much slower rate of about 300 words/min., or 200 bits per second. Ears are even slower at about 200 words/min. or about 150 bits per second. And the tactile sense can handle up to perhaps 20 words/min., or about 15 bps, using Braille.

What is most likely to happen is a shift to a multimedia form of communications with more visual and symbolic information, each carrying the type of information that can get processed most effectively on that particular channel.

Multimedia transfers more information at once

Visuals are good for conveying emotions. Print is better for abstract facts. This means the simultaneous attention to several information streams. Multimedia thus moulds several inflows, such as vision, hearing, and smell. Children already engage in informational multitasking. Television advertisements are a simple example for multiple information streams. They pack a lot into 30 seconds of picture, voice, music, and written language, all superimposed on each other and very tightly edited. Another example are sales presentations with their increasingly elaborate audiovisual aids.

This multi-channel communication will lead to new forms of communications language. Many more symbols will be used, because this can speed up the processing, and combines abstraction of written language with the speed of visual message. Even the sense of smell can, in theory, be used as a channel. Artificial smells are becoming production items. There are now "corporate identity" smells offered, and no doubt smells can be reproduced over distance. Touch and feel communication are also in development, first for sex applications.

"Virtual reality" technology is today's most sophisticated multitracking medium, filling up much of the user's sensory capacity by creating a simulation that permits the user to "enter" three-dimensional space and interact in it.

Will video push print out to a secondary role? Not really. Print works well for abstractions, whereas for images, video is superior. According to Nobel laureate Herbert Simon, the "least cost-efficient thing you can do" is to read daily newspapers. He recommends instead reading The World Almanac once a year. Thus,

each information stream and presentation has some advantages. For me, the information medium of the future is the comic strip. Or rather, the "hyper" comic strip: panels of text with still pictures, some of them moving like film when you touch the screen. There will be sound, and even smell. The text will go into deeper details and connect with other text, like hypertext. One can skim this hyper comic strip or navigate in it. This will be on flat and light display panels one holds like a book, and one could write notes on it, store it, and send it to other locations.

Response 6: Using Economics as a Screen

Allocating information-processing capacities by price

There are other important approaches to information expansion beyond technology and reorganisation. One of them is economics. To an economist, the main problem is the limited presence of economic mechanisms in allocating information processing capacity. If our individual and organisational attention is a limited resource, why should it not be allocated as other scarce commodities are? At least that is the question.

For example, we are being inundated by junk e-mail, each piece imposing some time cost on us, yet outside of a price mechanism. Why is our time a free good for anyone who wants to access our mailbox or telephone receiver? Let them pay for access. Prices are an excellent form of information about information. They provide relative values on time and information. In the upper reaches of power and prestige, access was always paid for indirectly. In advertising, marketers increasingly pay consumers rewards for attention. These payments can also be indirect, through a higher price for watching a programme without further advertising interruptions.

When it comes to telephone calls, people should be able to select among incoming calls electronically only those calls they want, and to assess an access charge for those commercial telemarketing calls they don't normally want to accept. Such a service might be described as Personal-900 Service, analogous to 900-service in which the caller pays a fee to the called party.

Markets for information access

Individual customers could set different price schedules for themselves based on their privacy value, and even the time of day. They would establish a "personal access charge" account with their phone, or a credit card company. The billing service provider would credit and debit the accounts in question. In such a way, markets in information access will develop.

Consumers will adjust the payment they demand in response to the number of telemarketer calls competing for their limited attention span. If a consumer charges more than telemarketers are willing to pay, they can either lower access or will not be called anymore. Because access is of value, exchange transactions would create rational markets instead of the present disruptive calls followed by hang-ups.

A similar principle could be applied to an E-mail, voice-mail, or fax system, with the sender assessing the content's value by attaching "urgent," "standard" or "junk" levels of "electronic postage" on an outgoing message. The postage would be charged against the sender's budget and credited by the recipient. This will cut excessive group lists and junk mail. These are a few suggestions for the general approach. There is no claim that a market mechanism will resolve all problems of the misadjustment in information processing. However, it is an approach that needs to be explored much more than in the past.

Conclusion

Information technologies will have similar impacts on society to the automobile

We may be talking about emerging information technology as if it is just about getting entertainment and study help into the home, and stock market data into the office. But it is naive to think that it will not affect us much more deeply. When the automobile was introduced, it was thought of a horseless carriage. But it did not stop there. Now, our cities, family structures, work, and neighbours are changed. The revolution in information transport will have a similar impact that the earlier revolution in physical transport had.

Information technology and its present advanced expression, multimedia technology, will not rectify the imbalance between information production and distribution, on the one hand, and processing on the other. It will not solve the problem of limited processing and of noisy channels.

A need for economic strategies to (pre-)select informational overloads

So far we have focused on organisational, political, and technological responses to the imbalance of information production and distribution to processing. None of these approaches has worked particularly well. Perhaps, therefore, it is necessary to take an entirely different approach, that of economics, a discipline at whose core lies the question of optimal allocation of scarce resources. Economics will not be the full solution, but we should think much more about economic approaches to information problems.

As we move from the traditional situation – information scarcity – to a new and unfamiliar era of information abundance, we must be willing to consider new approaches to information. Instead of focusing on creation and on flows, we need to give priority to the question of screening and processing. This is the next stage of opportunity and challenge for technologists, entrepreneurs, administrators, and for society as a whole.

Klaus Goldhammer / Ulrich Thomas Lange

The Internet – On the Verge of a Modem Society?

"Many conceptions about the potential of the Internet are frequently discussed while the problems are underestimated. ...The Internet ... should find the right balance of international, regional and local network performance. ...The future of the Internet lies in its disappearance."

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The Internet – On The Verge of a Modem Society?

K. Goldhammer / U. T. Lange

"The only thing that cheers me up is the Internet. My speeches are on the net and a lot of citizens retrieve them from there. So I don´t have to rely on the accentuation of journalists."

German Federal President Roman Herzog, October 1996

Content Privatisation – The Background of Media Evolution

The Internet thrives on its huge variety of privately produced content

Market research and marketing, the predominant rulers of today's media productions not only turned recipients into target groups and programming into a science of audience or listener flows, but gave new power to the consumer. TV and radio were among the first in an ongoing and sweeping change in the power structure of demand and supply in the media field. Our hypothesis is that the media themselves are undergoing a process of "privatisation" in terms of their content production. From TV talk shows and "video diaries" to call-in talk radio or even on-line chat groups: the professional use (and sometimes exploitation) of content provided by private people not only led to a wider appeal of distributed content in terms of a broader scope of topics, but also to a more banal range of subjects. Although generally appealing to recipients and relatively low in production costs, the distracting and quite often trivial media clutter increased.[1]

The Internet appears in this respect as the next step. With its bottom-up information infrastructure,[2] it seems more chaotic and less controllable, decentralised and unregulated. Thus, it offers more and new options for participation, because overall content production still remains predominantly in the hands of the individual.[3] The diversity and equality, scatteredness – and quite often banality in terms of available content – used to be one of the main appeals of the Internet, both to senders and receivers. Thus, professional content providers should keep in mind that the so-called interactive media especially will have to comply more and more with the growing eagerness to participate, to choose and to use the kind of media content that each single consumer prefers: whatever they want, however they want it, wherever they want it.

The Interconnected Society Is Yet to Come

The general concepts and foundations of the Internet were laid out in 1969 by U.S. military and later on by U.S. research institutions (F&F: Table 8.1.3, p. 332f.). For more than 20 years, the Internet existed quietly, left to its own devices as a communication tool for innovators, computer wizards and academics. Its unplannedness and uncommerciality were characteristics of the Internet. Between 1992 and 1993, two European researchers developed the so-called World Wide Web,[4] while a 25 year-old undergraduate student at the University of Illinois programmed a browser software that allowed a more intuitive usage of the Internet. "Almost anything that made a difference on the Internet was produced by people whom the corporate world might consider nobodies" (The Economist 1995). Together, these developments by nobodies evolved as new standards, alter-

1 Dunkley, Christopher (1996) The do-it-yourself revolution, Financial Times, December 11 1996, p. 11. Another threat in this respect is the history of CB radio. Starting in the early sixties as a cheap radio communication system for everyone, soon the channels of the citizens band radio were filled with people exchanging banalities. Today many of the Internet discussions and forums could be compared to this development (Stoll 1995, p. 112-115).

2 A term coined by Tony Rutkowski, executive director of the Internet Society (The Economist 1995).

3 Basically everyone with some computer skills can run and maintain a homepage on the Internet. No matter if it´s the federal president or John Smith, no matter if it´s a company with 200,000 employees or just two friends. All use the same access procedures and protocols, all have similar opportunities to present their data, the Internet even makes them look the same. Which is a problem for some companies, if they want to "look big" on their Website (The Economist 1995).

4 It might appear strange that Europeans developed one of the most important Internet standards, although the Internet was and still mostly is dominated by the U.S.. But keeping in mind that the researchers at the CERN physics laboratory in Geneva were working jointly and internationally, the urge to have a feasible on-line tool for world-wide cooperation at their fingertips appears even greater than in the U.S. alone.

ing the virtuality of the Internet with in-built multimedia capabilities and challenging the high-flying plans of the media industry. Suddenly there was a new medium available, combining the powers of broadcasting and publishing with another added feature: interactivity – a dream that telephone and cable TV companies were working on as part of their "Information Superhighway" concepts. But instead of a number of mostly unsuccessful interactive TV trials, the Internet came up with solutions the media giants didn't have: with its browser software, the World Wide Web had solved the principal handling of on-line information.

Interactive TV trials of the media industry were ridiculed by the Internet

While interactive TV trials mostly failed to offer interesting content, the non-proprietary standards of the Internet allowed anybody to put into the web whatever he or she found worth putting in. Although mostly useless, the vast number of sites and the huge variety of different sources offered sufficient new content to keep people interested. Rather than developing infrastructures, interfaces, set-top boxes or specially designed remote controls, the Internet made use of existing technologies like the PC, the modem and the ordinary telephony networks. By simply utilising telco overcapacities the Internet bypassed the problems of data distribution via highly expensive fibre-networks for interactive television.

With its – compared to interactive trials – huge number of already registered users,[5] the Internet made full use of Metcalfe's Law: the "value" of a network, understood by its utility to a population, is roughly proportional to the number of users squared. The more people went on-line, the more it became attractive to users as a whole.

Internet makes full use of Metcalfe's Law

Shortly after these new Internet standards had evolved, early adopters like trendsurfers and technophiles in the U.S. became aware of the World Wide Web as a fashionable gadget. As a third and fourth step, more and more "ordinary" people, the so-called early and late majority, is currently entering the on-line world in America. In Europe, this group might enter the Internet over the next years. But it's noteworthy that the growth of the Internet in terms of users and hosts came out of its structural surplus values such as individual creativity, relative simplicity, huge variety and not through the joint marketing efforts of the media industry.

Therefore, the Internet serves as a good example of how a medium thrives on its own advantages. While telecommunication companies lobbied and U.S. politicians promoted the concept of an "Information Superhighway", the Internet had already paved a road that the industry was only constructing. These overlaps of one side promoting an idea that already existed on the other side, fuelled the general public breakthrough. Suddenly, politicians, journalists and managers alike in the U.S. and similarly but belatedly in Europe started to believe and to talk about new technologies emerging, offering tremendous opportunities. The Information Age was frequently heralded; either the enthusiasts proclaiming it had already arrived, or according to the more cautious it is due to come. The cautious are probably right. Although there were 14 million Americans connected to the Internet

5 By January 1989 the Internet had already grown into a network with 80,000 hosts worldwide.

Table 1: Growth of On-line Connectivity Is Slowing Down
Estimated World-wide Number of Users in Millions

Number of...	1995	1996	1997	1998	1999	2000
PC users	144	167	184	203	217	225
E-Mail users	35	60	80	130	180	200
Internet/Webusers	9	23	46	81	122	152
Online/Hybridusers	8	13	18	23	27	30

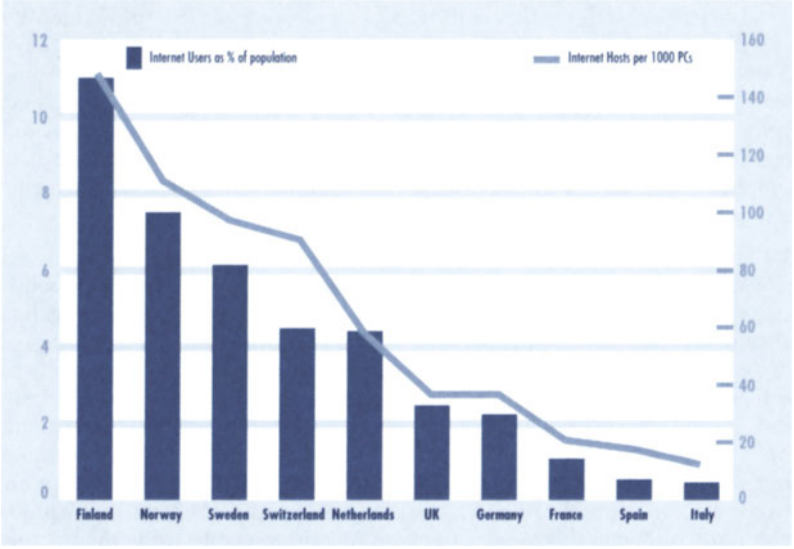
Internet growth will slow down

in 1996, PC sales – as *today's* indicator for the possible number of Internet connections – are already slowing down (Table 1). However, the U.S. is getting closer to reaching a critical mass of people using the Internet, enforced by flat telephony rates and high powered backbones. The belief in what we call the "Internet Law"(that every year the number of people connected to the Net doubles as in 1994 and 1995) can be refuted by simple mathematics. Internet growth in terms of users will soon slow down, although there might be some 150 million users by the year 2000.

Europe is at least two to three years behind the U.S. Internet situation

Europe is far behind American figures. Even in techno-friendly Finland, only 11.2 percent of the population were connected to the Internet in mid-1996, whereas in the European core countries only 0.4 to 2.5 percent of the population

Table 2: Internet Penetration in Europe (6/1996)



Sources

Table 1: Morgan Stanley (1996), p. 3-1
Table 2: Internet Society; ITU: Datamonitor; Booz Allen & Hamilton (1996)

can use on-line connections (Table 2/3). European surveys show, that only a small and mostly affluent group (in terms of education, disposable income and computer literacy) has joined the on-line community. As Europe is following the U.S. trail with a delay of at least two to three years,[6] the real Internet market in Europe is yet to come. And unless at least some of the many barriers to the Internet are lowered, a truly broad usage of the Internet by the general European public appears less likely.

We are now going to discuss the hurdles to and problems of the Internet. Many conceptions about the potential of the Internet are frequently discussed, while the problems are underestimated (Stoll 1995; Lynch/Lundquist 1996, p. 157-161). Most of these problems are interconnected and thus add up to a set of difficulties that may hinder the rise of a fascinating new medium.

Bottlenecks of the Internet are underestimated

Table 3: Internet Penetration in Europe

country	Users as % of total populatation (6/96)	Number of Internet Hosts per 1000 PCs (6/96)	Number of Hosts connected to the Internet		
			1/1994	6/1995	6/1996
Finland	11.2	149	35,707	112,528	301,337
Norway	7.7	111	18,027	50,549	121,475
Sweden	6.1	97	42,251	109,087	190,484
Switzerland	4.6	91	n/a	n/a	105,667
Netherlands	4.5	58	44,917	136,503	216,153
UK	2.5	36	117,076	346,688	579,756
Germany	2.2	36	120,034	429,249	603,790
France	1.0	20	56,675	112,182	194,131
Spain	0.5	17	15,155	41,551	85,698
Italy	0.4	12	18,027	50,549	119,952
Belgium	n/a	n/a	7,544	24,416	44,358
Denmark	n/a	n/a	8,703	36,347	80,182
Ireland	n/a	n/a	2,330	9,541	21,483
Portugal	n/a	n/a	3,382	8,950	15,776
Greece	n/a	n/a	1,935	6,224	11,896
Total EU	n/a	n/a	486,631	1,469,722	2,692,138

The percentage of population using the Internet differs significantly in Europe: While the Scandinavians – as in mobile telephony – are well ahead with up to 11 percent of the population surfing the Internet, the core countries UK, Germany, Spain and Italy are still at an early stage with less than 2.5 percent of the population being Internet users.

6 Just look for example at the crucial question of connectivity. While Americans are already replacing T3-Lines with lines that offer even greater data-processing capacities, Europeans are still dreaming of getting a T3-Line.

Sources

Table 3: Internet Society; ITU: Datamonitor; Booz Allen & Hamilton (1996); European Commission (1996): EU Wise Report DGXIII, May 1996; RIPE/EITO (10/1996)

Hurdles to the Internet

The obstacles and potential or existing setbacks for the Internet are manifold. Most of them arise from a combination of its technological history, which once supported its fascinating rise, and today's enormous number of users. Firstly, there are some grave bottleneck problems that appear today as a great turn down. Secondly, the question of which usages and applications will be feasible in the long run (as well as the models for refinancing Internet services) has not yet been answered.

1. Hurdle: Contents

Every medium is only as interesting to people as its convenience and its content. As the concept of the Internet offers quite sophisticated convenience transferring data to one's desk, the question of contents remains mostly unanswered. People can obtain relatively little, despite flashy homepages. Webcasting is still in its early stages. To become appealing to the general public, a wider variety of contents, especially for the non-English-speaking, is urgently needed.

Print media might regain some of their advertising market shares lost against TV

In the wake of electronic publishing as the next step for old media conquering new ground there will be an attempt to overtake and professionalise Internet content production, which from an economic perspective is a not yet fully tapped media field. As print media (compared to TV and radio) currently experience a technological advantage when applying their content productions to the Web, it is more likely that electronic publishing will be the first to enter the on-line media successfully, rather than electronic broadcasting (European Commission 1996). Thus it will be interesting to see whether print media will regain some of the advertising market shares they lost against television in the 1980s and 1990s.

E-mail, not video-on-demand is the "killer-application" of the Internet

The lack of interesting content is the driving force for the industry to search for the so-called "killer-application",[7] the single application that offers enough added value to induce the broad usage of the data-highway. In fact, there is already a successful application for the Internet: E-mail. Since the early 1970s it always has been and – at least from today's perspective – will be the most useful and attractive application the Internet provides (Hafner/Lyon 1996, p. 187-218). Microsoft's Bill Gates believes the application with the most potential for the Internet will be video-on-demand (Gates 1995, p. 68). This idea appears unlikely, as the transmission times needed are ridiculously high (F&F: Table 8.2.4, p. 336). Besides the transmission time it is even safe to say that this application would lead more to an implosion of the net than enforce its broad usage: too many bits would override the umbilical data cord. The danger of a potential roadkill on the data-autobahn is apparent. New applications for new kinds of contents distributed over the Internet such as telephony, radio or even television lead to a data congestion, that could induce a breakdown of parts of the system if the worst comes to the worst, and at best lead to clogged bandwidths.

7 The word itself appears badly chosen, as its basic meaning is contradictory to what it's supposed to express.

2. Hurdle: Bandwidth / Bottlenecks

Up to now, the slowness of data-distribution over the Internet is more than a setback: it can potentially hinder any mass appeal. Transmission rates of 15 bytes per second are not that unfamiliar to many – especially European – users and the WWW as an acronym for "World Wide Wait" is not only a bad joke but also a deeply frustrating experience. The slowest part rules the speed of the rest of any network and a lot of the providers save money by overloading their leased backbones.[8] Network owners also play an important role in this area, as the costs for leasing backbones are exorbitantly high. They provide more than a bad service, as they threaten the future acceptance of the entire Net in the long run. From today's perspective, the broad appeal of the Internet will only come if bandwidth as a serious bottleneck problem is solved, be it through compression algorithms or bigger cable capacities, better transmission technologies[9] or all three together. In a lot of European homes there are already copper-coax-cable connections to receive additional TV programmes. Without waiting for the glassfibre world, those systems could be used soon to improve the interactive services of the Internet.

3. Hurdle: Pricing / Tariffs

One of the main reasons for the impressive rise of the Internet was its virtual low costs, both for usage and infrastructure. But in fact, the Internet only appears to be cheap. Until now network infrastructures and services have been heavily subsidised by governments and businesses.[10] Besides the hidden infrastructure costs, non-usage related fees worked as another price advantage for the rise of the Internet, especially in the U.S., where flat rates[11] are not only offered for telephony but currently also for network connections by providers such as AOL. Europeans always refer enviously to the United States as a model of flat rate telephony which worked as a necessary precondition for the success of the Internet. But the disadvantages of flat rates can be studied in the U.S. already. Too many people spend too many hours clogging phonelines and the Internet alike. While the Americans are already discussing the re-introduction of usage-related fees, Europe appears to be in need of such tariff structures in order to fuel further progress. For most Europeans, using the Internet not only means paying the service provider a basic charge but also a fee related to the number of megabytes downloaded or the number of hours on-line, on top of paying their telco for simply being connected to the provider. Thus, access, usage fees and the costs for local telephony in Europe very often exceed the 60 dollar level per month, although 20 to 30 dollars seems to be the maximum amount of money users intend to spend per month in the long run. In 1998, after the deregulation of the European telecommunication market, the Internet should get a new boost from price reductions and the reorganisation of telephone tariffs.

8 Considering the fact that some European Internet providers only maintain a single 500kbit-line to the U.S. (for sometimes as many as a thousand users) gives an impression of what the term bottleneck means.

9 Telcos are working feverishly on technologies to solve the bandwidth problem. ISDN appears already outdated and too slow. ADSL and cable transmissions seem to be the choice for the future. But costs will be hefty.

10 One shouldn't forget that people who use the Internet quite often don't have to pay for their usage: students get free access via university computers, and business users don't have to pay for their usage anyway.

11 Flat rate means unlimited local calls, included in the basic telephone charge. Although the U.S.-Baby Bells are already considering dropping their flat rates, hoping to make higher revenues and reducing the number of people on-line for too many hours.

Using the Internet has to be as easy as using a microwave

4. Hurdle: Interfaces / Technology

Until the early 1990s the Internet was purely ASCII text. No images, icons, pictures or anything else. Interfaces were similarly bad in design and handling. They didn't exist because it didn't appear necessary for the on-line crowd, who were used to their computers. Internet usage soared when browser software facilitated usage and visual appearance improved significantly. But one still has to have a reasonable amount of computer skills in order to join the Internet. One has to know how to run a computer, how to connect a modem and how to install the necessary software successfully. And then it's still not necessarily the case that the new Internet user is familiar with hypertext-structures, whether he or she will find the data wanted or even return to a page visited before or whether he or she can handle the gathered data (Table 5). "The computer's universal ability to generate frustration" (Stoll 1995, p. 60) plus the difficulties of the Internet technology itself (including the questionable design of many user-interfaces) account for the exclusion of a huge amount of people: the non-technoliterate. Other complex technologies are far less difficult to handle. No one has to have the skills of a mechanic

Table 4: Problems Using the Web (1996): Multiple answers possible, shares weighted
Users were asked which of the following items they encountered while using the Web:

- cost: **"It costs too much."**
- find info: **"Not being able to find a page I know is out there."**
- lost in htex: **"Not being able to organise well the information and pages I gather."**
- return: **"Not being able to find a page I once visited."**
- speed: **"It takes too long to view/download pages."**
- visualise: **"Not being able to visualise where I've been and where I can go."**

	All	Male	Female	USA	Europe	19-25	26-50	50+
cost	608	380	146	340	85	132	292	30
share (%)	9.19	9.20	8.47	7.72	14.41	10.15	8.10	5.96
find info	2,144	1,189	682	1,392	177	469	1,076	144
share (%)	32.39	28.79	39.56	31.61	30.00	36.05	29.85	28.63
lost in htext	355	145	146	221	22	54	160	35
share (%)	5.36	3.51	8.47	5.02	3.73	4.15	4.44	6.96
organise	2,222	1,434	549	1,499	195	471	1,241	143
share (%)	33.57	34.72	31,84	34.04	33.05	36.20	34.42	28.43
return	883	506	270	567	88	208	422	69
share (%)	13.34	12.25	15.66	12.88	14.92	15.99	11.71	12.13
speed	5,355	3,398	1,354	3,509	499	1,050	2,932	400
share (%)	80.90	82.28	78.54	79.70	84.58	80.71	81.33	79.52
visualise	735	407	225	465	69	137	372	57
share (%)	11.10	9.85	13.05	10.56	11.69	10.53	10.32	11.33

Sources

Table 4: http://www.cc.gatech.edu/gvu/user_surveys/survey-04-1996; Copyright 1994, 1995, 1996: Georgia Tech Research Corporation

just to drive a new car, no one has to know about the circuits and microprocessors inside a TV set in order to watch. Thus, the need for easier Internet technologies and more intuitive interfaces is evident. Inventions like WebTV, @home or the upcoming Network Computers (NCs) or Java Computers (JCs) could be successful in this respect.[12]

5. Hurdle: Intellectual Property / Copyrights

One of the most appealing ideas of the Internet is the promise of easy access to information. All kinds of digitised data, software, pictures, books, music or films could be downloaded. Pupils and students especially could take advantage of "information at their fingertips." But besides a very limited number of projects trying to make books or data-bases available over the Internet,[13] the related software, publishing, music or film industries are more than reluctant to put any data into the networks. Why is this so? Simply, because copyright laws don't apply to the Internet. Intellectual property rights, safeguarded by copyright laws and patents are the key technique to ensure that someone's ideas and creative works are remunerated. In a digital network environment, distribution and copying of such data appears not only uncontrollable but also ceaseless, because there would be no loss in quality from reproducing the data. Unless entirely new copyrights relaws developed that deal sufficiently with intellectual property rights in a global network environment, unconditional access to all kinds of information via the Internet might remain a myth.[14]

6. Hurdle: Financing Systems / Interactive Advertising

The development of the Internet appears in some respect comparable to the evolution of old media like the radio. When radio broadcasts started in the U.S. in the early 1920s, they were mainly run by enthusiasts, shops and the radio manufacturers, who wanted to have content produced for their reception equipment. But nobody knew in the beginning how radio could be financed in the long run.[15] Similarly to this uncertainty in the early days of broadcasting, the Internet is going through a time where many enthusiasts and some software manufacturers are engaged in the contents field, while traditional media are moving into the Internet more slowly. Just as in the old days of radio broadcasting, nobody knows exactly how Internet refinancing systems will be organised. Interactive advertising is still in its early stages, but it is already clear that on-line advertising will have to offer more choice for consumers, which messages they want to receive. This power-shift might change the style of marketing significantly.

However, nobody knows yet what the system will look like in the end. The now popular banner ads can't be the solution to the interests of the advertisers, as they are weak in their visual appearance and restricted in their ability to deliver intended messages.[16] We are going to discuss the economic backgrounds, financial thresholds, marketing opportunities and threats later on in more detail.

12 In the Autumn of 1996 Sony and Philips presented WebTV, a US$300 set-top box, working basically as a small computer with no hard disc, that brings the Internet onto a normal TV screen and allows a 30 Mbit connection over normal copper telephone lines. Other companies have already announced similar systems. @home is a project in Northern California, that also provides Net access over TV cables. (Hammond 1996, p. 116-117). See also: www.netscape.com/comprod/tech_preview/index.html; inferno.lucent.com; www.diba.com; kotranet.kotra.or.kr/product/worldclass/lgs/; www.lge.co.kr

13 For example the "Project Gutenberg", founded by Professor Michael Hart at the Illinois Benedictine College has digitised about 200 books. By the year 2001 about 10,000 books are planned to be available over the Internet (Stoll 1995, p. 175). Or see the "Virtual Institute of Information" provided by Columbia-University (http://www.ctr.columbia.edu/vii/).

14 A UN conference in Geneva in November 1996 came up with a list of suggestions regarding Internet copyright. By extending the Berne convention on international copyright laws, the UN conference suggested that the storage of Internet pages in the temporary cache of a PC is lawful. Any other copying or storing of copyrighted Internet pages as well as their distribution should be prohibited. The regulations have to be confirmed by national governments. Initiative Media (eds.) (1997) Schutz von Urheberrechten im Internet, Mediagramm, Issue 1/1997, p. 14. See also on recent European copyright regulations: Gaster, Jens (1997) The harmonisation of copyright and related rights – in this report.

15 Smulyan, Susan (1994) Selling Radio. The Commercialization of American Broadcasting 1920-1934. Washington, London.

16 As software has already been developed to mute those kind of on-line ads, their time may already be over.

But to summarise our brief overview of Internet hurdles one can say that at the moment the Internet is in need of solutions in several important areas: content, bandwidth, pricing, interface technologies, copyrights, refinancing systems and the related area of interactive advertising. Most of these questions (and there are others like child protection and privacy[17]) are connected and unless most of them are solved, a significant growth of Internet usage and scope – beyond the relatively small number of the technoliterate – seems highly questionable. Especially in Europe.

"Let me start by asking you to imagine a picture of a senior executive of a telecommunications company, in his office, in front of his PC equipped with every possible multimedia, CD-ROM facility, connected to the local area network and connected to the outer world by Internet. Now, what is his experience? The quality and capacity of his local area network is going down. Internet is not his primary tool for conducting business. But his normal data traffic is suffering because everybody else on his LAN is using it for Internet traffic. But he is a modern executive, so nevertheless he is surfing the net. He has discovered that by addressing pages worldwide he is now able to obtain information that previously would take days to come to his desk. He has learned to identify pages more interesting than others. He can use search engines to do his job a little bit more effectively. But he and his colleagues are extremely annoyed by the waste of time, the endless hours spent on downloading information that may sometimes turn out to be useless or waiting for something to happen while watching galaxies and stars coming down to earth or exploring by different means the cyberspace. So why is it then that this executive, so recently attracted to this cyberworld and so frustrated, will still recommend his company to lead an Internet initiative? Because as I said: Internet is the most important development in telecommunications since mobile telephony".

Kaj Juul-Pedersen[18]

The Internet – A Necessary Intermediary, Close to Implosion

The Internet creates demands which its technology may not yet serve. Nevertheless the Internet is a necessary phase to go through in order to build up a more efficient communication network. Some Internet protagonists suggest that the most important contacts between people will be their *international* relations. But only a few users are really cosmopolitan people with lots of friends around the world. So in fact the vast majority of data used by the Internet community could be delivered in regional or even local networks.

The Internet is close to an implosion.[19] The way it is conceptualised now contributes to unnecessary traffic within the international telecommunication networks. This could go from bad to worse if users start to telephone, listen to the

17 But we don't consider them to be a problem for further growth of the Internet. Electronic activists in the U.S. in particular are arguing heavily to safeguard privacy. They fear that the automised combination of data, collected from different Internet sources, where a user left "digital footprints", could severely undermine the idea of personal freedom and be abused by governments and businesses alike. For a more detailed discussion of privacy issues in a network environment see Cavoukian/Tapscott 1997; Ludlow 1996. The second related problem area is the question of child protection on the Internet, whether from obscene or pornographic or neonazi material, which otherwise is generally kept out of reach for children, but on the Internet can be accessed easily.

18 Surveying The Competitive Internet Landscape And The Likely Position for Telcos, Internet Service Providers And Vendors In The Internet Value Chain, Speech by Mr. Kaj Juul-Pedersen at the Telecoms, The Internet II Conference in Geneva on 29th October, 1996.

19 Siegele, Ludwig (1996) Warten auf die Datenfinsternis, Die Zeit 27. Dezember 1996.

radio or even watch videos via the Internet. Furthermore a very important factor of environmental pollution in the Internet is the hyperdesign phenomena, jazzed-up homepages with lots of graphics and animations, which are very often unnecessary to interpret the content searched.

The technological bottlenecks of Internet 1 could be understood at its best by new strategies to build up a more efficient Internet II. As the Internet is too slow, the world of on-line services will be divided at least into two Internet worlds: "The first step in the project will be to establish high-bandwidth pathways ... . This means building or leasing new fibre-optic lines and installing improved switching equipment. Internet II also will use new 'protocols', or standards, for sending data. The current Internet uses a system called 'best effort', which essentially means 'everyone for him- or herself'. Data is bundled into short packets, each of which travels separately through the system. Packets from a particular message don't necessarily follow the same route and don't necessarily arrive at the receiving computer all at the same time, but the receiving computer can assemble them into the original message. That's fine for text and still pictures, but not so fine for voice and video. In a voice transmission, for example, you don't want to go back and retransmit a lost packet and have it pop up later in a sentence; you're better off ignoring it. Part of the problem is that the Internet is too democratic: it treats all packets equally where some, like those carrying voice or video, should have priority. Internet II will have more than one class of service, and computers will select the one most appropriate for each type of communication. At least one class will offer 'guaranteed bandwidth'. Once a connection is opened for, say, a video conference, users can count on a steady flow of information until they are finished."[20]

The Internet is close to an implosion

The Internet II which is intended to speed up traffic between research institutions will not solve the problems of the common user, and within the scheduled time frame the Internet II is built up ("Complete deployment of Internet II is expected to take three to five years."[21]) the implosion of the Internet I is likely to occur. The transportation crisis is already perceived by the telecommunication industry in the U.S. as well as in Europe: "Speaking about access and backbone capacity, let me turn to ... the traffic volume perspective. The traffic volume generated worldwide by the telephony service is approximately 10 million Gbit per day and is closely linked to the number of subscribers. Compare that to the Internet type communication.... If the current increase of that type of traffic is to be believed also for the future, it will already next year surpass the volume of telephony traffic and continue to grow at a very fast rate. This is the reason why network operators, access providers and service providers are busy building traffic capacity to the delight of their suppliers. This is also the reason why there is a perception today that Internet is close to a breaking point. I am sure you all know about the spectacular blackouts which have happened to Internet service and access. And it is absolutely safe to predict that more will come. Or if not, then delays and waiting."[22]

20 Steel, Bill (1996) Internet II: A boon for researchers, a proving ground for Internet I, Cornell Chronicle http://www.news.cornell.edu/Chronicles/10.31.96/Internet_II.html

21 (Steel 1996)

22 Surveying The Competitive Internet Landscape And The Likely Position for Telcos, Internet Service Providers And Vendors In The Internet Value Chain, Speech by Mr. Kaj Juul-Pedersen at the Telecoms The Internet II Conference in Geneva on 29th October, 1996 "Our observations suggest that there are three waves of traffic, each with its own distinct characteristics: The first wave, the E-mail type of best-effort service that dominated Internet until 1993 puts relatively low requirements on response times and quality. And is today only a fraction of the telephony traffic. The second wave is the large file transfer or the web traffic generated by communication tools, web browsers etc. This traffic has a larger information content and higher requirements on bandwidth and quality. And already today that traffic is equal to the total telephony traffic. The third wave which is just to come is the video and real time traffic and the interactive duplex communication with very high requirements on response time and quality of service."

"The future of the Internet lies in its disappearance."

Who is the driving force behind Internet II and what will be invested to solve the traffic crisis? "... several dozen colleagues, universities and government agencies have joined to launch a new, improved, faster network. As of Oct. 8 (1996), the consortium consisted of 37 schools, with a few more expected to join. Eventually the project is expected to involve 50 to 100 schools, along with a few government agencies and major computer and telecommunications companies. In return for access to the new network, all will contribute funds. Cornell, like the other universities participating, has pledged $25,000 toward the creation of the organisation that will administer the project and will contribute about $500,000 per year for the next three years to the actual development and maintenance of hardware and software. Some of this is expected to come from government grants; part of the $500 million in federal money recently pledged by President Bill Clinton for expansion of the Internet will go to the Internet II project."[23]

Will the Internet Disappear?

The Internet – a necessary phase to go through

The future of the Internet lies in its disappearance. We are actually moving towards an integrated universal Internet which does not seem to be tailored enough for the specific needs of different user- and target groups. The Internet of the future should find the right balance of international, regional and local network performance. Juul-Pedersen reduces the Internet to an "IP-Technology" and would like to take it as a mega attractor for plain old telephone services. He believes the strategy for telecom vendors meeting the Internet challenge consists of three steps:

1. Bridge voice and data communication values to the Internet. This means developing the public and private telecommunication networks to become an excellent access path to Internet services. It includes developing access systems, voice gateways, service directories, and gateway functions for adapting the telecom network to the Internet world.
2. Migrate voice and data communication values to the Internet. This step involves selected communication features, such as security, billing, statistics, and guaranteed quality of service. It means introducing these features as added value to the present Internet infrastructure and services. It means more connection-oriented transport and switching. It means building ATM networks with still better technology because many of today's ATM solutions do not provide service guarantees and have an inherently bad overload performance. Our research shows ways of improving this by 30%.
3. Extend functionality by providing new values based on Internet communications concepts. This step involves an active development of new features for the Internet world in close collaboration with other vendors as well as selected operators."[24]

23 Steel, Bill, Internet II: A boon for researchers, a proving ground for Internet I, Cornell Chronicle http://www.news.cornell.edu/Chronicles/10.31.96/Internet_II.html

24 Surveying The Competitive Internet Landscape And The Likely Position for Telcos, Internet Service Providers And Vendors In The Internet Value Chain, Speech by Mr. Kaj Juul-Pedersen at the Telecoms The Internet II Conference in Geneva on 29th October, 1996.

New features could enhance the variety of Internet usage and services offered by merging different technologies. The best example for the convergence of telephony and the Internet is Ericson's *Phone Doubler*: "The Phone Doubler is a ... product designed to bridge the gap between telephony and Internet. In its first version it enables an end user connected via a normal analogue modem to receive ordinary telephone calls while connected to Internet over the telephone line. Our surfing end user receives an incoming telephone call. Normally the incoming call would meet a busy tone. In this case however it is forwarded to a voice gateway which converts the telephone call to voice over IP and forwards it to the PC over the busy line and presents the call to the end user in a fashion similar to Internet telephony. The Phone Doubler also supports outgoing calls."[25]

Universal networks for everybody and everything bear high risks

The risks of universal networks for everybody and everything are still high and if a real convergence is enabled it should take place in a realm of plenty and abundance to avoid critical traffic peaks which could harm the most necessary communication traffic.

One of the central strengths of the Internet seems to be one of its major weaknesses: the plurality of its interfaces. Whoever wants to place something into the Internet has to take into consideration the variety of browsers available. It seems as if the proprietary systems are rather outmoded, although the serious user is still waiting for a guaranteed quality which should include a well-structured and foreseeable interface.

Application Cultures of the Internet

The new Internet will deliver enhanced services

E-mail, as we have seen, seemed to be the "killer-application" for the Internet, although more and more people want to get "information" over the WWW. They want to be entertained by a coincidental surf or want to participate in electronic chats. And even e-mail is not just a short message exchange anymore which may have been sufficient for the early adopter. "We still want e-mail, but with a few twists. Now it must conform to certain standards so that it can inter-operate with our neighbours' e-mail systems. And it must come with smart messaging and smart mailbox capabilities to help us filter and file our e-mail. ... With the advent of next generation operating systems based on object-oriented, distributed file-system technology, local messaging infrastructures will merge seamlessly with other groupware systems. In a sense, e-mail will become one of many front-end views into a vast enterprise database consisting of public-workgroup, and private information. Messages will exist as rich structured forms as well as textual objects. They will increasingly be exchanged between and among mail-enabled applications and they will be sent to shared databases as well as to individual mailboxes" (Blum/Litwack 1994, p. 8/13).

The race for the best central interface or browser is still open and even the quality of the central tool, the PC, is not yet determined: "The PC is not a fixed product but

25 ebd.

The race for the best central interface is still open

a continuum" (Gilder 1994, p. 209). The set-top-box and the PC will be "competitors" for the private entrance to the Internet. Although bandwidth and price seem to be (for the moment) more in favour for the Web-TV version, the computer is much better adapted to the world of the experienced user and already invades the new communication cultures of the very young. Andy Grove, according to Gilder, sees the PC as by far the more adaptable machine for the new communication environments: "By contrast, the set-top box won't have the volume, the installed base, the software, or the adaptability of the PC. By the time they get all the necessary functions into the set-top box at the right price point, the PC will be controlling the TV as a mere peripheral" (Gilder 1994, p. 209). But if the computer really is to enter the realm of entertainment on a scale that would be comparable to the time spent in front of TV, it should not be crippled by the smaller bandwidth of the connecting network and hampered by incomprehensible modem technology.

"The true power of the PC remains obscure"

"Until endowed with broadband connections, the computer is a cripple, devoting huge portions of its processing power merely to compressing, decompressing, coding and decoding its data for the telephone system bottleneck. It is because of the bottleneck that the true power of the PC remains obscure to many observers. It is because of the bottleneck that the TV and consumer electronic industries can imagine themselves as significant rivals to the PC. But once provided with broadband communications, the PC will come fully into its exponential harvest from microcosm to telecosm" (Gilder 1994, p. 210).

Although Gilder underestimates the long-lasting effects of a traditional media setting like TV (the favourite place for the TV set is the favourite room) and doesn't refer to the problem of the screen size (TV is still the "largest" screen in the private home and the larger the screen the more pleasure you'll have watching audio-visual products) he could be right that the cultural technique "interactivity" will be learned much quicker and more effectively while using the PC.

The window-in-window logic of the PC will conquer the TV world

Whereas the World-Wide-Waiting-hurdle may be solved technologically and even faster and even more cheaply with TV-technology, the new social networks are already emerging today around the PC. The "typical options" for new "cultures of Internet" (Shields 1996) are offered "in the sort of a menu: games, special interest forums, registry, electronic mail and teleconference" (Argyle 1996). The interwoven technology opening several "windows" to the world at the same time is the personal computer and not TV. The window-in-window logic may conquer the TV world sooner or later as well, but the zapping and channel hopping couch-potato is not in every respect identical with the ambitious "communication specialist" who is urgently looking for dedicated communication experiences (Lange). So the question of how to retrieve data and to construct a personal information basis may be secondary for a new generation intending to spin their social networks around computer and Internet technologies. The interactive TV may come "too late" for those people who already use their computer knowledge to participate in the spin-off in virtual space.

The interactive TV may come to late for the Netizens

The immediate switching between communication modes (although remaining in the same technological channel) and the deliberate mixing, juxtaposing and splitting of the public and the private are the specific thrills of the informal cultures within the Internet.

"In electronic mail and postings to Usenet groups and special interest forums, users do not interact with each other; instead they are responding to ideas left by others on specific topics, or in forums with a pre-determined subject ... . Private correspondence with specific individuals are held via electronic mail. These are responses which only the addressee will see. In forums, anyone can answer, and all will see the response. Here there are no action commands to express the state of the writer at the time of the post. Instead, other avenues have been utilised to express meaning at a deeper level" (Argyle 1996, p. 64).

Lost in Space

"The good questions have no easy answer"

Many users get lost while surfing, and there should be some critical remarks allowed, if the Internet with its on-line databases is a real contribution to acquiring knowledge: "On-line databases reply readily ... direct answers, the kind that show up on multiple-choice exams. It's black-and-white view of the world, one well suited to a digital network. Alas our world has no such simplicity. The good questions have no easy answers; likely they have no answers at all. But it's the quest that beckons so seductively! Search the Internet for the pathway to world peace and justice. Find a database telling how to settle the thousand-year-old cross-cultural hatreds in Serbo-Croatia. Create a spreadsheet that balances the federal budget" (Stoll 1995, p. 124).

Neither the journal nor the book must actually fear Internet competition

The Internet is a perfect tool to very quickly get at least some idea about a new topic of which the user doesn't know anything at all or on the other hand a distracting detour to a precise problem of a specialist. So far, neither the journal nor the book must fear competition from serious knowledge acquisition in depth via the Internet. And the hyper-links of a CD-ROM are far more attractive than the slow speed browse in the Internet book. Even TV has its advantages in comparison to the Internet. The new interactive technology Internet has to prove that it is really stronger in providing better information than the older technology. "Wide bandwidth is one of the holy grails of the on-line community. How about a three-million-bit-per-second communication channel, connecting your desktop to the latest news? Hey, it's already here, in the guise of broadcast television. If you must keep abreast of the latest events at work, put television on your work desk. Tune it to the Cable News Network. A TV is cheaper than a modem, easier to operate, and you'll get a wide bandwidth, channelled news, with an occasional commentary tossed in. Of course, it's absurd to put a TV on your work desk. Yet the Internet, with its wide access to games, newsgroups, and chat lines, is considered desirable for the office. Go figure" (Stoll 1995, p. 100/101).

**"Where are the public servers for the "average" citizen?
...So the democratisation of content production is a fiction."**

The level of "activity" of Internet users is overestimated

Most of the Internet users in relation to "content" are "passive" participants, with no direct access to an Internet-Server. The question of how to incorporate a private PC as an active building stone for the Internet has still to be solved. The hurdle of designing an html-page is lowered day by day, and suitable editors, which could even be included into the accustomed word processing environment, are now offered on the market. But where are the public servers for the "average" citizen? Some of the proprietary service providers offer some reservoirs for private messages to the outer world, but to start as a "content provider" on a small scale is rather expensive. So the democratisation of content production is a fiction, written by those early adopting spongers who had access via a public or private "sponsor". "Only the geographic distribution of Internet emphasises the differences between users who are typically students or researchers who access the Internet through the mainframe computers and computer communication links paid for and maintained by universities, government offices and companies. Typically, Internet has flourished because users could make personal use of computers and e-mail facilities which are paid for at a bulk rate rather than a charge-per-use basis" (Argyle/Shields 1996).

The democratisation of content production is a fiction

New social access through public support

Now as the second wave of usage is expanding in Europe, extending the Internet to people with lower income or lower education, politicians should take the opportunity to open access through public support. Instead they pretend to be members of the new Internet community by employing young assistants to design their homepages, which nobody really wants to hit. Each new user study tries to prove that the percentage of women using the Internet is growing, and take it as an indicator for the "civilisation" of the net, but it will require a strong effort to give less technology-oriented people, like the elderly, an equal opportunity in future. This does not necessarily mean that every citizen would like to have or "deserves" Internet access, but if citizens want to use it, the Internet as a new infrastructure should be affordable to them.

"We can be certain that the digitisation of money coupled with low-cost, high-speed, global, forever-growing, interactive networks will lead to many new forms of economy. If the use of anonymous digital cash and encrypted communication reaches critical mass on the Net, it has the potential to cripple and ultimately destroy the notion of both local and national taxation, it will dismantle corporations and it will fuel a cacophony of black markets, grey markets and sub-economies."

Ray Hammond (1996)

"As every world currency comes to have an equivalent value in digital money (...), the natural tendency is to move toward a singular world currency. The ideal form of digital money will be a currency without a country, or of all countries, infinitely exchangeable, without the expense or inconvenience of exchanging among local denominations. (...) Digital money may in fact be leading us away from the banking and monetary systems we are most familiar with today."

Lynch/Lundquist (1996)

Internet Economics – E-cash and the Denationalisation of Currencies

In the financial world, money is already digital, global and mostly out of reach for governments

Each day, the London based Euro-Bond market shifts about 1 trillion dollars around the globe via its computer networks. The "Society for World-wide Interbank Financial Telecommunication" (SWIFT) moves more money electronically each month than most countries have at their disposal as a years budget.[26] Money and especially the trafficking of money is already digital, global, and in this respect mostly out of reach for government control. (Hammond 1996, p. 154-167) – The "denationalisation of money", a concept promoted by economist Friedrich August von Hayek in theory, has already been put into practice – at least in the financial world.

As a next step, the Internet could become the first fully private denationalised trading and exchange system, both for consumers and businesses. Like in the early ages, when bills were issued by private banks, the emerging digital banks of today – which are mostly joint ventures of credit card and computer companies (Table 5) – are already working on systems to issue their own electronic currencies:[27] Digital money would open opportunities for businesses, especially Internet businesses, around the globe as well as posing serious threats to the world economy:

Methods of billing and payment could be facilitated and accelerated. E-Trade would be much cheaper and faster, especially for banks, as transaction costs are minimised while transaction speed would increase significantly (Table 6). Cash and cost control would be much more precise, as credits and debts could be accounted in real-time. The acceleration in transaction speed could itself force significant changes on businesses and consumers, as the delays of today's banking system are often taken as an economic advantage by debtors.

Although Internet-related revenues world-wide reached about 16 billion dollars in 1995 (Table 7), Internet commerce is ridiculously low in scope.[28] The absence of

26 Over 90% of all financial transactions worldwide are transmitted digitally. Less than 10 percent of the American Dollars exist as actual bills or coins, similarly there are only 223 billion German Marks physically existent but 4 trillion Marks are stored digitally (Freyermuth in Bollmann/Heibach 1996, p. 179-182).

27 "Someday, digital cash will let us exchange goods via e-mail. Complete with encryption, authentication, and zero-knowledge proofs of identity, this will let us make on-time transactions that are as good as dollars. The system will know that we've been authorised to make the transactions, it'll confirm that the sellers are willing to sell goods, it'll assign special codes to prevent our accounts from being debited twice, and – bong – the transactions happen. All with total digital security. At least that's what I'm told" (Stoll 1995, p. 163).

28 IBM estimates in a German press release, that Internet shopping worldwide in 1995 reached only 73 million US dollars.

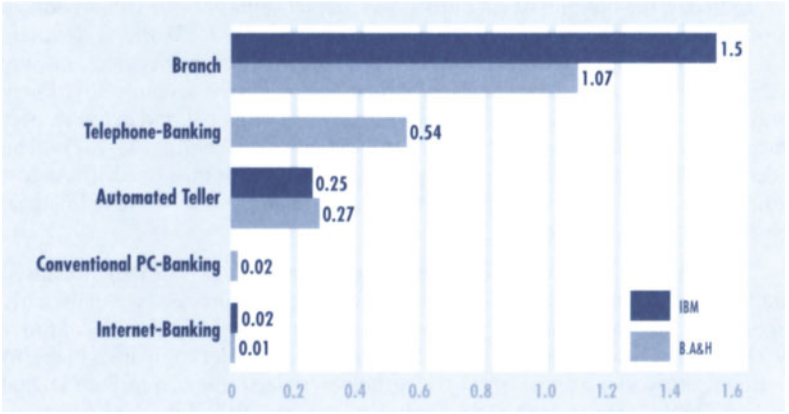
E-Cash: Selling and buying digital is expected to grow over the next decade enormously. Different systems with different features are awaiting the mass market, with security still the hottest topic.

Table 5: Comparison of Features and Comparative Strengths of Various Digital Money Systems (1996)

	CheckFree	CyberCash	DigiCash	First Virtual	NetBill	Netscape*	Open Market
Independence	yes	yes	yes	yes	yes	no, requires Netscape	no, only at designated cybermalls
Security	yes	yes	yes	yes	yes	yes	yes
Privacy	no	yes	yes	no, it is designed to link	no	no	no
Offline payment	yes, by check	yes, on smart cards	yes, on smart cards	no, Email is required	no	no	no
Transferability	sort of (EFT)	yes	yes	somewhat (credit cards aren't transferable)	no, credit cards only	no, credit cards only	probably within a cybermall
Divisibility	no, only standard denominations	yes	yes	(possibly yes at InfoHaus)	yes	no	no
Target customers	consumers	banks	consumers	info business	consumers	consumers	businesses
USP/Special service	bill paying	bank & merchant transactions	bill paying	microtransactions for selling info	info from universities	credit-card transactions	secure storefront

Tempting: Internet banking is by far cheaper for banks than any other transactional system. It is strange, that only few on-line services are offered in Europe.

Table 6: Cheaper Transactions on the Internet
Costs for banks per transaction in US $



a suitable financial transaction tool has hindered any serious growth. It is claimed that E-cash could solve the security problems of credit card numbers transmitted over the Internet. E-cash could therefore become a feasible tool for on-line shopping. High-flying forecasts range from 920 million dollars (Baskerville Com.) to 5 billion dollars (Morgan Stanley) coming solely out of Internet commerce by the year 2000. In 1995, ordinary catalogue sales with 53 billion dollars world-wide and TV home shopping with 2.5 billion dollars could indicate the size of future Internet shopping markets.[29] These precursor behaviours (including video rental, mail-order purchase, TV home-shopping or home delivery services) are much smaller in scope in Europe than in the U.S.. Internet commerce in Europe might therefore take off much later than in America (Lynch/Lundquist 1996, p. 124-127).

29 Although one has to keep in mind that the ordinary mail-order customer is probably far away from shopping on the Internet (The Economist, 1995; Stoll 1995).

Sources

Tabel 5: Lundquist/Lynch (1996): Digital Money; Freyermuth in Bollmann/Heibach (eds) (1996)
Table 6: Booz, Allen & Hamilton; Wirtschafts-Woche 48/96; IBM (1996)

But there are many open questions regarding E-cash. Besides the fraud problem, which digital banks promise relentlessly they have solved (and which we do not believe, as any financial security system is subject to criminal interests), trust and authentication of seller, buyer and the digital bank are core questions.

As e. g. IBM E-cash would appear much more attractive as a stable and trustworthy investment than the legal tenders of any third world country, money could become reprivatised. Thus, keeping in mind that the Internet is a genuinely global medium in scope, governments are due to lose control over electronic money flows. The perils of electronic commerce systems getting either out of control or under the control of a single private power are vast. The inherent dangers of digital money, or a privately issued digital tender not handled responsibly are obvious. If E-cash is ever successfully introduced, governments will probably be forced to take legislative action in order to tackle possible fraud and the potential threats to their own currencies.

Currencies are quite often perceived as a symbol of national sovereignty. As the Euro, the common European currency to be adopted between the years 2000 and

Table 7: Estimated Internet-related Revenues in 1995 and 2000 in millions US $

	1995	Growth	2000	Revenue sources
Direct Infrastructure	2,200	+ 636 %	14,000	
Data Networking Equipment	1,600	+ 500 %	8,000	Incremental revenues to companies to build Internet
Internet service providers	400	+ 1200 %	5,000	Internet service providers
Internet Security Equipment and Software	200	+ 500%	1,000	Firewalls, virtual private networking, transaction/ authentication enabling solutions
Indirect Infrastructure	10,950	+ 392 %	43,000	
PC, Servers and Semiconductors	10,000	+ 400 %	40,000	PC and server companies
Telecommunications and Related Services	700	+ 286 %	2000	Internet services
Telecommunication Equipment	250	+ 400 %	1000	Incremental revenues to companies to build Internet
Software and Services	900	+ 567 %	5,100	
Application Software	600	+ 417 %	2,500	E-mail, TCP/IP application, browsers, authoring tools
Enterprise and Networking Software	200	+ 1000 %	2,000	Enterprise/database/server software sales related to internet
Internet/Online Services, Consulting and Development	100	+ 600 %	600	Services and consulting
Content and Aggregation	1,850	+ 919 %	17,000	
Organisation/Aggregation	1,500	+ 400 %	6,000	Online service providers and search engines
Information	1000	+500 %	5,000	Incremental revenues from pay-services and advertising
Publications/Static and Publications/Interactive	50	+ 2000 %	1,000	Magazines (printed and electronic) adressing the Internet
Commerce and Transactions Processing	200	+ 2500 %	5,000	Incremental revenues from related to Internet-based transactions
Total revenues	15,900	+ 497 %	79,100	
Revenue created by or for Internet	4,950	+ 729 %	36,100	incl. Direct Infrastructure, Software and Services, Content and Aggregation

Electronic commerce and electronic publishers could expect the highest relative growths in Internet-related revenues although they remain small in comparison to infrastructural revenues.

Sources

Table 7: Morgan Stanley (1996): The Internet Report, p. 1- 12, ECC calculations

E-cash and monetary policy

2002 demonstrates, many governments of EU member states have difficulties in explaining to their electorate why the Euro should replace the old national currency in the long run. But with digital money emerging, these problems appear obsolete and even irrelevant, as E-cash – with its potential to bypass the transaction costs of foreign-exchange markets (Lynch/Lundquist 1996, p. 121) – would not replace any old currency but introduce a new *global* standard as a overarching monetary system probably before the year 2000.

Micropayments, Downsizing Transactions

A new concept in trade: Micropayments

The second emerging economic idea is the concept of downsizing Internet commerce as *micropayments*. They have become a whole new category of financial transactions by using divisible quantities of digital money for any transaction (Table 8). Similar to the telephone tariff structures, this concept could become the most promising source for Internet revenues, by breaking down today's necessary high payments for many services or goods into infinitesimally tiny sums that only hurt when the monthly bill arrives. Due to the combination of very low delivery and transaction costs for commerce on the Internet and the exclusion of middlemen, payments can be very small, but they would still allow the provider to generate sufficient profits (Hammond 1996, p. 149-150). Thus the Encyclopaedia Britannica wouldn't charge a large sum for a collection of books or a CD-ROM[30] that get dusty on the shelf, but perhaps only less than a pound for a single topic that is retrieved from their Internet homepage. Thus not only databases and libraries could suddenly turn into goldmines, with their revenues potentially rising high if copyrights are cleared, but also the threshold of buying high-priced goods could lower, as the price for a single piece of information or service for the customer is small, while the overall revenues for the supplier would still be reasonable.

Microtransactions have become a whole new category of financial transactions, especially on the Internet, by using divisible quantities of digital money for any service offered.

Table 8: Downsizing Financial Transactions: Micropayments

Payment	Business - Business	Business - Person	Person - Person
Large	Planes	Autos	College tuition
Medium	Parts	TVs	Birthday gift
Small	Office supplies	Sweater	Town board (items/garage sales)
Micro	Real-time payment for the delivery of numerous small items/components	Web Page hits cartoon of the day	Person becomes a microbusiness

The question now is, how these products and services are sold over the Internet. Interactive marketing is going to change the nature of tomorrow's advertising rapidly, as new tools and new marketing concepts emerge.

30 Already book sales have collapsed in competition with CD-ROM, and probably on-line will be the next challenge (The Economist 1995).

Sources

Table 8: Lynch/Lundquist (1996)

"We'll ask you to register and we'll ask your permission to send you mail once a month, and if you are willing, we'll upload a few profile bits about how you' re using the applications and what your hardware is. ... And so the relationship, even on productivity software, is a lot more intimate and ongoing."

Bill Gates, Microsoft Corp. on Internet services, Newsweek 12/96

"A Few Profile Bits" – The Future of (Interactive) Marketing

New powers to the consumer: Interactive marketing will opt for their rights to choose

Jupiter Communications predicts for 1996 that overall web-based ad spending will reach 300 million dollars worldwide. A drop in the advertising ocean, but significant enough for a serious start. But the interesting issue is not the current market size of advertisements on the Internet (Table 11), but that interactive marketing itself evolves as a entirely new way of advertising and selling products and services. Consumers have the power to decide which on-line advertisements they

Table 9: WWW-Advertising: Top on-line spenders and earners

company	expenditure 4Q 1995 (in $000)	revenues 4Q 1995 (in $000)	expenditure 1+2Q 1996 (in $000)	revenues 2Q 1996 (in $000)
American Airlines	254			
AT&T	567		1,178	
C/NET	237	540	1,036	2,080
CNN		594		
ESPNET		600		1,343
Excite			1,436	2,397
Hot Wired		720		
Infoseek		1,215	1,448	3,793
Internet Shopping	329			
Lycos		1,296	1,279	2,551
MasterCard	278			
MCI	231			
McKinley Group			1,384	
Microsoft	240		2,009	
NECX Direct	322			
Netscape	556	1,766	1,313	7,755
Newspage				1,407
Nynex			1,001	
Pathfinder		810		
SportsLine	218			
WebCrawler		660		1,235
Yahoo!		1,086	1,279	3,702
ZD Net				2,072
Top Ten - Total	3,323	9,287	13,363	28,335

Webvertising: In the second quarter of 1996 spending on advertising on the net nearly doubled to US$43 million worldwide compared to the first quarter. For 1996 Jupiter Communications predicts that overall web-based ad spending will reach US$300 million.

Sources

Table 9: Web Track; Jupiter Communications; Screen Digest February/October 1996, Business Week Sept. 1996; Wired 12/96

want to see (The Economist 1995; Forrest/Mizerski 1996, p. 155; Hammond 1996, p. 126 -131). This shift in activeness (F&F: Table 8.4.2, p. 352ff.) and the newly-gained power of consumers turns former advertising into webvertising, which will only get attention if it offers added value. Thus infotainment and gratification will be the key techniques for reaching consumers in an interactive environment. But webvertising changes the nature of the Internet, as it can only be put into practice by the traditional big players, who can afford sophisticated ads almost regardless of price. While small companies might only be capable of promoting their Web page locally, big companies might webvertise in the most popular sites. "Suddenly the Internet is beginning to look a lot less like the much hyped global-village market" (The Economist 1995).

The four C's of webvertising: Convenience, Choice, Creativity, Connectedness

But what should webvertising look like? Instead of the four P's in the classic marketing mix (product, price, promotion and place), Fishburne and Montgomery suggest focussing on four C's as elements for "superservice" in an interactive marketing environment: convenience, choice, creativity and connectedness (Fishburne/Montgomery in Forrest/Mizerski 1996, p. 283-299).

Convenience: as products are becoming less distinguishable in terms of quality, service and reliability, the actual process of buying differentiates the product. Shopping convenience could become a true asset of on-line commerce, be it through the process of buying products from one's desktop or by offering the wanted product and the related information as conveniently as possible. Gratification can enhance the on-line marketing convenience and may become the most important attraction to draw consumer attention.

Choice: the implicit structure of the Internet gives consumers the choice to decide upon the information being delivered and which products should be bought. By finding the information they want, consumers could be enabled to draw their conclusions faster, more accurately and with less bias than ever before. Supporting the consumer's need for information and choice will therefore be a key instrument of interactive marketing.

Creativity: in a world of on-line commerce, as we have seen, the advertiser has to customise his messages and products to the needs of many different customers who take advantage of their newly-gained powers to choose. Creativity doesn't only mean reacting to these different needs of the empowered consumers, but also creating new services and offerings for as yet unknown needs. Instead of pure, down-to-earth selling, webvertising will have to create infotainment-oriented content that attracts customers with its creativity.

Connectedness: on-line selling and buying will have to incorporate tools that allow businesses to adapt the needs and desires of customers, thus enabling the suppliers to react fast, cost-efficiently and appropriately to their customers. Suppliers are already taking advantage of a connected on-line environment by tracing information relevant to their customers with the help of *cookies*.[31]

31 Invented by Netscape, cookies are supposed to store relevant user data while clicking between different WWW-pages. They can be designed by any content provider on the Internet and stored on the user's hard disc drive when clicking onto a certain webpage. (On a Macintosh they are called MagicCookie, on a PC cookies.txt). Only the latest Netscape browser 3.0 gives the user a choice to decide if a cookie should be stored or not.

Cookies make it possible to retrieve consumer preferences

Cookies are opening new opportunities for market research, advertising and sales on the Internet. Invented by Netscape, cookies can be programmed to automatically store relevant information, regarding consumer behaviour or equipment. The "few profile bits" could contain information about the software and PC in use, about how often someone has used a certain Internet service or competing hosts, thus enabling businesses to tailor their offerings. The industry is already programming cookies and planting them onto the on-line user's PC. Whenever a person comes across the site that planted a cookie, the stored data is retrieved. Advertisers have already set up Internet servers that trace all transferred files for relevant information "for market research reasons".

The Holy Grail of marketing: automatically tracking consumer behaviours and equipments for personalised services

Cookies could therefore become the Holy Grail of marketing. The perils of an Orwellian marketer's dream of customer behaviours and preferences that can be tracked automatically the moment a customer enters the (on-line) shop in order to offer exactly the personally-preferred range of products and services are obvious. Other research techniques such as single-source studies could become obsolete, as cookies automatically combine convenience and choice to allow personalised services. In the future, the concerns of users will have to be addressed, and it does not appear unlikely that cookies might become restricted, if not prohibited, as the possible dangers of abusing the generated data might be too high. While a whole range of assorted problems, from the feasibility of e-cash to privacy issues raised by the rise of cookies have not yet been solved, on-line commerce has incredible potential both in scope and scale. If the Internet ever grows beyond the number of the "happy few" users of today, on-line interactive marketing could change our perceptions of buying and selling to a great extent, altering the quality of services by offering more choice, more convenience and more creativity – and less annoying old school advertisements.

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Klaus Schrape / Wolfgang Seufert

The Economics of New Information and Communication Technologies: Markets, Growth and Employment

"There are widespread expectations in political and economic circles in the western industrialised countries that, besides ... substitution effects, a growth impulse will be generated and the media and communication sector will grow faster than the economy as a whole."

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New Multimedia Applications: Simultaneous Product and Process Innovation

Digitalisation and New Media Products

The rapid progress made in digitalising electronic production, transmission, and storage processes for a wide variety of media has created a huge innovation potential for new electronic media, which, in future, will supplement – and to some extent substitute – existing media products. It has become standard practice to subsume developments in various sub-areas – digital TV, digital radio, digital video discs etc. – under the rubric "multimedia applications". This term has thus taken on a similar function to the term "new media" at the start of the 1980s, when it was cable and satellite technology and videotext services that were the prime foci of attention. From the users' point of view, the central features of the new multimedia products are the greater scope they offer for interaction and for combining previously separate media types (text, animation, pictures, audio, video). A distinction can be drawn between so-called offline and online multimedia products and services.

Offline versus online multimedia products and services

* In the case of offline systems, the services and programmes (e.g. reference works, learning programmes) can be used interactively and are stored on a medium. By means of digital compression and rising storage density, the quality of supply will increase enormously compared with the current systems and will increasingly be able to incorporate video sequences.
* Online multimedia involves the interactive use of programmes and services that are offered by external computers (so-called servers) and which can be called up via the telephone line or wireless forms of telecommunication. A distinction needs to be made between systems which merely permit the selection from a very large number of distributed programmes (e.g. near-video-on-demand through scheduled programmes of the same content) and genuine interactive services offering individual access to stored data (e.g. video-on-demand) or services linked to communication services (e.g. electronic sales catalogues with the option of placing an order directly by computer).

In the wake of these product innovations, those areas of the economy producing or distributing media and communication goods will undergo major structural change. The costs of the electronic production and distribution of media can, due to digitalisation, be expected to follow a more favourable trajectory than, for instance, the costs of producing print media or of the physical transport of media products. Due to these changes in relative prices, substitution effects between "old" and "new" media are likely, and these will lead to corresponding changes in the media budgets of consumers.

Lower costs will change relative prices

Yet there are widespread expectations in political and economic circles in the western industrialised countries that, besides these substitution effects, a growth impulse will be generated and the media and communication sector will grow

faster than the economy as a whole. This is either because the attractiveness of the new multimedia products will induce users to cut back on other activities (changes in consumers' time budgets), or also due to changes in relative prices, whereby it is thought that the prices of the new media products will develop more favourably not only than those of "old" media, but also with respect to most other commodity groups (changes in overall consumer budgets).

Technical progress and globalisation force prices down

Price trends of this nature may arise due to technical progress in microelectronics. In addition, though, global markets are expected to develop for the new multimedia products, generating a relatively high degree of competitive pressure, and thus pressure on prices, in this area. Such globalisation is expected given the signs of a global standardisation of offline multimedia technology and the fact that in the longer term all offline multimedia products will be able to be marketed globally via telecommunications infrastructures adapted for this purpose.

New Media Products as Process Innovation

Communication is a significant element of the production process

Yet the new multimedia products and services will not only be demanded by private households as a product innovation, thus leading to changes in the structure of consumer demand. New and cheaper media and communication goods also constitute a process innovation throughout the economy, within which internal and external communication, the search for information and its subsequent processing, constitute a significant element of the production process.

It is these potential applications of the new information and communication technologies that have placed the media and communication sector at the centre of the current global debate on the correct path for the western industrialised countries to take towards an "information society".

Generally it is posited that, while the new multimedia will lead to major structural changes on the labour market with regard to skills and working conditions, a growth impulse for the economy as a whole will also be induced, which will significantly raise the level of employment as a whole, and thus help to solve the problem of unemployment in the industrialised countries, and especially in the EU.[1]

This optimism seems to contradict the so-called productivity paradox that has characterised experiences so far with the deployment of information and communication technologies: although information and communication technologies increased markedly as a proportion of overall investment throughout the world in the 1970s and 1980s, rates of productivity growth declined over this period in all western industrialised countries.[2]

In this context it has been argued that the deployment of the new technologies itself will not lead to perceptibly higher productivity, but rather the more efficient organisational processes that they make possible: it is argued that the required changes in corporate organisation will take time.

1 See also Ifo-Institut, Qualitative und quantitative Auswirkungen der Informationsgesellschaft auf die Beschäftigung, Report commissioned by the Federal Ministry of the Economy, München 1996.

2 Berndt, E.R./Malóne, T.W., Information technology and the productivity paradox: getting the questions right, in: Economics of Information and New Technology, Vol. 3 No. 3-4/1995.

"Promoting the development and application of new multimedia products and services is thus seen as a central instrument of a more general growth and employment policy that goes far beyond mere support for a single promising economic sector."

Different qualities of the new generation of information and communication technologies

It has also been claimed that the new generation of information and communication technologies are characterised by specific factors that distinguish it from old information and communication technologies. It is no longer the optimisation of internal information processing or that of production processes (CAD, CAM, CIM etc.) that constitute the central concern of the new applications, but the optimisation of external communication and the creation of know-how. This, it is argued, will lead to a new form of national and international specialisation between and within corporate networks and to an accelerated accumulation of knowledge. According to new growth theories, this leads to faster technological progress and thus faster overall economic growth.[3]

Multimedia, Growth and Employment

From such a perspective, promoting the development and application of new multimedia products and services is thus seen as a central instrument of a more general growth and employment policy that goes far beyond mere support for a single promising economic sector.

Accordingly, in recent years under the rubric of the "highway to the information society", all the leading industrialised countries have taken initiatives in this area.

The USA in September 1993 with the Clinton/Gore initiative "The National Information Infrastructure – Agenda for Action";[4] The European Commission in December 1993 with its White Paper on "Growth, Competitiveness and Employment" and the subsequent Bangemann report "Europe and the Global Information Society" (January 1994);[5] Japan with a study by the national telecommunication council into the development of a Japanese info-communications infrastructure, published in May 1994 under the title "Reforms toward the Intellectually Creative Society in the 21st Century".[6]

Also of note are the efforts now being made to coordinate at international level the initiatives emanating from these action plans. For instance, at the start of 1995 a summit meeting dealing solely with the topic of the information society was held within the framework of the G7 consultations.[7] In addition the OECD has increasingly become a discussion forum for economic aspects of information societies, by virtue of its Information, Communication and Computer Policy (ICCP) committee that has commissioned studies and organised workshops on these topics.[8]

Compared with the policy concepts pursued in the 1980s in the context of support for new information and communication technologies, a number of central changes can be observed. With the exception of Japan, where to a large extent support funding is currently being directed towards the creation of fibre-optic networks,[9] the question as to the correct infrastructure policy for government – in France and Germany, for instance, for many years discussed in terms of the opposition fibre-optic versus copper – is of only subordinate importance. Rather, government is relying on competition between private firms, which is

3 Erber, G./Hagemann, H., Zukunftsperspektiven Deutschland im internationalen Wettbewerb: Industriepolitische Implikationen der Neuen Wachstumstheorie, Berlin/Stuttgart 1995.
4 Clinton, W.J./Gore, A., Technology for America's Economic Growth: A New Direction to Build Economic Strength, President's Office, Washington D.C. 1995.
5 Kommission der Europäischen Gemeinschaften, Wachstum, Wettbewerbsfähigkeit, Beschäftigung. Herausforderungen der Gegenwart und Wege ins 21. Jahrhundert, Weißbuch, Luxemburg 1993, (Bulletin der Europäischen Gemeinschaften, Beilage 6/93), and Kommission der Europäischen Gemeinschaften, Europas Weg in die Informationsgesellschaft – ein Aktionsplan, (KOM (94) 347 endg.).
6 Telecommunications Council, Ministry of Posts and Telecommunications Japan: Reforms toward the Intellectually Creative Society in the 21st Century, May 31, 1994.
7 G7-Konferenz über die Informationsgesellschaft am 25. und 26. Februar 1995 in Brüssel, Schlußfolgerungen des Vorsitzes.
8 OECD Workshop on the Economics of Information Societies, Workshop No. 1, Paris 1996.
9 VDMA/ZVEI (Ed.), Wege in die Informationsgesellschaft, Status Quo und Perspektiven Deutschlands im internationalen Vergleich, Frankfurt/Main 1996.

supposed to lead to swift cost reduction and thus to a rapid dissemination of the supply of hardware, media products and information services. In Germany this deregulatory strategy has become particularly evident in recent months with the passing of the Telecommunication Act (the remaining elements of the telecommunications monopoly are to be abolished by the end of 1997), agreement between state prime ministers to amend the state treaty on radio and television (marked increase in the maximum market share in radio and televisions programmes transmitted nationwide) and the contours of the planned central government "Multimedia Act".

Deregulation in all major countries, but also state support programmes

This deregulation strategy is in line with the underlying policy concepts pursued by the other leading industrialised countries, although with a view to international competition between countries as a production location governments have not refrained entirely from state support programmes. The regional, national and EU support measures concentrate – and this also constitutes a departure from previous practice – more on pilot applications in selected application areas (such as transport telematics, telemedicine or teleworking) than on support for certain information technologies or individual media and communication branches. The same is true of the USA.[10]

Expectations in political circles are high in the face of the prevailing problem of unemployment. It is estimated that on top of the 18 million registered unemployed in the EU a further 9 million are looking for work. Japan is stuck in the longest economic depression since the Second World War. The USA, on the other hand, which over the past decade has enjoyed the greatest success in creating new jobs, can point to the major contribution made to job creation by the information and communication sector.[11] Consequently, prognoses that point to a significant growth and employment impulse from multimedia applications are eagerly greeted by politicians and are being exploited to promote the acceptance of a rapid introduction of the new multimedia technologies despite the inevitable substantial structural changes on the labour market that they imply. The following can be cited as examples of such optimistic prognoses:

A study by Arthur D. Little conducted in 1994, according to which around 5 million new jobs are to be created by multimedia in the EU by the year 2000;[12] the study by the Japanese telecommunication council mentioned above, according to which more than 2.4 million jobs could be created in Japan by the new multimedia market by the year 2010; a study by the Council of Economic Advisors (CEA) to the US President, which postulates that an accelerated development of a national information infrastructure would create an additional 1.7 to 2.0 million jobs in the USA to the year 2003.[13]

There are a whole series of other studies which suggest in some cases even higher, but in others significantly lower, employment effects. To some extent this is linked to the fact that three causal levels need to be distinguished, that in the public debate are frequently confused:

10 op. cit.
11 Siwek, S.E./Furchtgott-Roth, H., Coyright Industries in the US Economy: 1993 Perspective, IIPA, Washington, October 1993.
12 A.D. Little, Multimedia: Europa am Scheideweg. o.O, 1994.
13 Council of Economic Advisors (CEA), Economic benefits of the Administration's legislative proposals of the telecommunication's, Washington 1994.

Three causal levels to be distinguished in the employment debate

* quantitative employment effects resulting from the sectoral growth of those branches producing media and communication goods;
* quantitative employment effects at the macroeconomic level generated by the deployment of the new information technologies in all areas of the economy;
* structural or qualitative employment effects arising out of changed occupational contents or changes in work organisation, for example due to the introduction of teleworking.

Secondly, the prognoses are naturally based on differing underlying assumptions and/or use different methodological procedures to estimate the quantitative effects and thus arrive at different results.

The aim of this paper is to present the spectrum of expectations associated with the new multimedia applications, as manifested by various recent studies into their growth and employment effects, and – as far as possible – to shed some light on the assumptions and methods underpinning these studies.

The first section deals with the spectrum of expectations regarding the development of the market for information and communication goods, and in particular with the pace of the diffusion of new multimedia applications. In the subsequent section we analyse the expectations derived from this for the sectoral growth of the information and communication sector. Finally a number of studies that have attempted to quantify the growth and employment effects of the new media and communication technologies at the macroeconomic level are analysed.

In the concluding résumée we address the question as to the significance that should be attached to the employment argument on the basis of these empirical studies in designing a regulatory framework for the media sector.

The Rate of Diffusion of New Multimedia Goods and Services

Positive employment effects are to be expected if technological progress in the field of media and communication technologies and the new services, programmes and applications this progress makes possible generate market growth that both raises labour productivity through process and product innovation and is sufficient to more than offset intrasectoral (and, where appropriate, intersectoral) substitution effects.

During the past three years a large number of market prognoses of the development of telecommunications and multimedia markets have been published, a synopsis of which has recently been put forward by the ifo-Institute.[14]

Market prognoses differ too widely to permit their comparative evaluation

These market prognoses differ too widely to permit their comparative evaluation. The differences begin with the geographical areas covered, affect the definition of the market (the sub-markets considered), and involve the extent to which the assumptions made and the forecasting methodology can be examined and appear well-founded.

14 ifo-Institut, op. cit., pp. 14-15.

"The only thing that these prognoses have in common is that they tend to predict high rates of expansion and turnover growth for the media and telecommunication market."

The only thing that these prognoses have in common is that they tend to predict high rates of expansion and turnover growth for the media and telecommunication market.

This section uses trend scenarios on the development of media and communications expenditure by three demand segments (private households, firms, government) to examine – primarily for Germany – whether the trends expected can in fact be financed. It is only possible to mention at this point the urgent need for a comparative, EU-wide study of this subject.

Market Segmentation and Constraint / Bottleneck Problems

In order to produce scenarios of the expected development paths of the diffusion and demand and applications of the new multimedia goods and services it is first necessary to divide the market up into segments. There is no sign of a consensus on this point. At least three different perspectives are in competition at present: technology-centred, distribution-oriented and media content oriented perspectives.

Three different perspectives: technology-centred, distribution-oriented and media content oriented

The field of new digital media can be usefully structured by means of the following cross-classification (Figure 2.1).

Figure 2.1: The Structure of the Market for Electronic Media

	Offline	Online		
Value-Added Services (programmes/services)	• Linear Programmes/ Services • Interactive Programmes/ Services	• Electronic Information Services • Digital Television (Pay TV, PPV) • Interactive Television (VoD) • Electronic Services	Electronic Publishing (multimedia Publishing)	Electronic Kiosk
Distribution Infrastructure (networks)	• Material Distribution • Distribution Channels (trade)	• Telecommunication Networks - telephone/ISDN - cable/satellite - euro-ISDN - mobile telephone	Communication Highway	
Terminal Devices (platforms)	• MM PC • CDV, CD-I etc. • Game Consoles • etc.	• MM PC or PC TV • TV PC (set-top box)	Multimedia Platforms	
	Offline Multimedia	Online Multimedia	Digital Media	

On the supply side the online segment can be sub-divided further, namely into the subsegments "narrowband", "broadband" and "terrestrial" (Figure 2.2).

In order to generate demand scenarios, this segmentation on the supply side must be seen in the context of the distinction between three demand-side groups:

Three demand segments: business, public institutions, private households

* the business sector (firms of various size categories and industries);
* the public sector (public institutions such as administrative authorities, health and transport organisations, schools, universities, research institutes, libraries);
* the consumer sector (private households with their needs regarding communication, information, entertainment and education).

Figure 2.2: Segmentation of the Multimedia Market

	Offline	Online			
		Narrowband	Broadband	Terrestrial	
Value-Added Services (programmes/ services)	• Linear Programmes/ Services • Interactive Programmes /Services	• Electronic Information Services • Electronic Services • Online Services Compu-Serve/ Internet • Audiotext	• Digital Television (Pay TV, PC) • Interactive Television (Video on Demand) • Media on Demand	• DAB • Mobile Telephone • Digital Television	Elec-tronic Kiosk
Distribution Infrastructure (networks)	• Material Distribution • Distribution Channels (trade)	• Telephone/ISDN- ISDN • MMPC	• Cable Network • B-ISDN	• Radio • Satellite	
Terminal Devices (platforms)	• MM PC • CDV, DC-I etc. • Game Consoles • etc.	• Video Telephone • Fax	• TV-PC (set-top box) • PC-TV	• TV (set-top box) • MMPC • Mobile Telephone • Radio Receivers	
	Offline Multimedia	Online Multimedia			

These three demand segments – which would have to be sub-divided further to permit a more highly differentiated prognosis – each exhibit specific conditions for the diffusion of multimedia demand. This is also true, by the way, of different countries in a cross-country comparison. Among others, the following influential factors need to be considered: quantitative relations (number of demand units), equipment requirements, objective needs, purchasing power or potential for raising finance, decision-making structures, time budgets, competence requirements and acceptance. Seen from the perspective of a desire for rapid diffusion, the various demand segments can be considered as being characterised by different "constraint problems".

As a result of these differences in initial conditions, the three demand segments exhibit different innovation-diffusion trajectories over time with respect to multimedia goods and services.

In all the demand segments the pace of diffusion will depend decisively on whether it is possible to solve these constraint problems – and if so, how quickly – and thus to provide cost-effective services and programmes to demanders/users that have great utility value in solving the latter's problems (Figure 2.3). The constraints can be divided up into three major groups:

* constraints that facilitate or restrict the supply of multimedia goods and services (technology, competition, the political-legal framework);
* constraints that restrict the creation and provision of attractive goods and services by firms;
* constraints that hinder or delay rising acceptance, demand and utilisation.

The first two constraint fields will, as it were, be "placed in front of the brackets", in the following discussion, in order subsequently to be in a position to

Figure 2.3: Constraint Problems in Opening up the Multimedia Market

Levels	Constraint problems
Technology (R&D)	• Maturity of the technology (standardisation)
Competitive strategies	• Platforms
Politics/law	• Regulatory framework
Supply/Suppliers	• Skills/know-how • Design of programmes/services • Distribution channels • Price policy (costs)
Demand segments	• need for problem solution/acceptance • equipment requirements • financing • competence/learning curve

deal with the diffusion of acceptance and demand in the consumer, business and public sectors in separate sections.

The enormous dynamic in the field of digital technology means that no technical limitations are at present conceivable regarding the multimedia goods and services currently "in the pipeline". The technological requirements have, therefore, in principle been met, but in many cases the products are still a long way from being ready for the market (maturity). Often years pass between laboratory trials and prototypes and standardised products constituting lasting and marketable solutions. Figure 2.4 illustrates the points in time at which the leading technological applications can be expected to have achieved market maturity. In addition, standardisation and stable expectations for all those participating in the value-added chain are central elements in facilitating the marketability of systems products and applications.

No technical limitations, but market maturity problems

Figure 2.4: Market Maturity of Leading Technologies*

Technological areas		Year	Development constraints
Offline multimedia:		1995	• Change in generation of appliances and operating software
NB online multi-media:		1995	• Refurbishing or initial acquisition of terminal appliances • Standardisation of user surface
BB online-multimedia:	Distribution services (DTV):	from 1997	• encoder standard • set-top box • modernisation of cable networks
	Services on demand (video on demand)	from 1998 (pilotprojects from 1996)	• server technology (availability) • two-way capability of the cable networks and/or hybrid solutions • standardisation of ADSL and ATM technology • refitting existing home distribution systems and terminal appliances • extending fibre-optic network
	Interactive services (ITV):	from 1998 at the earliest	• standardisation of ATM technology • changes to cable networks and home distribution systems • refitting of new acquisition of terminal appliances

* Figure 2.4:
NB = narrowband
BB = broadband
DTV = digital television
VOD = video (or multimedia) on demand
ITV = interactive television (or services)
BC = broadband communication networks (cable TV)
ATM = flexible package switching technology for broadband services
ADSL = transmission switching technology for video on demand via the telephone network

Market maturity does not mean market availability, however. Between the two comes the capital-intensive and costly construction and extension of distribution channels and network infrastructures and of local or regional marketing and service organisations. (Examples include mobile telephones, internet/online services, digital television). Only once this is in place can the various demand segments "on the ground" be reached and exposed to the necessary marketing and communication pressure. This factor tends to be hugely underestimated in terms of the delays in market development it implies.

A third factor that can serve as a constraint in the start-up phase of market development is the statutory and regulatory framework. In a similar way to technological standards, clear political-statutory rules, implemented at the right time, create a secure environment within which the various actors can plan for the future and thus help to accelerate development from the supply side.

Development of multimedia programmes and services still in the "trial and error" phase

The development of multimedia programmes and services, i.e. of the actual problem-solving capacity for the demand segments, is currently still in the "trial and error" phase and is consequently not yet highly professionalised.

- Most suppliers of multimedia products come from various branches of the media and communication sector (e.g. data-processing software, publishing, audio-visual producers etc.) and have only some of the qualifications, skills and rights required for multimedia productions. The required know-how is accumulated on the principle of learning by doing and thus grows slowly.
- It is difficult to obtain skilled personnel holding the know-how combinations required for multimedia productions as training courses are adapting only slowly to the changed requirements.
- The factors relevant for determining the success of suppliers and marketers of multimedia productions are only gradually becoming apparent.
- The "gold-digger mentality" characteristic of the initial phase, with hopes of quick returns in a booming market (CD-ROM products) has led to deficiencies in client and target-group-oriented product development.

The above diagnosis applies in particular to multimedia products oriented towards consumer sector demand, less so to multimedia goods and services for commercial use. The lack of professionalism in product development poses the danger of the market being flooded with products whose utility value to users is extremely limited. This would be counter-productive in terms of the diffusion of acceptance and demand. At the same time, these supply-side constraints constitute strategic points of leverage for complementary policy measures in support of multimedia development (cf. the relevant support programmes initiated by the EU and the national policies of the various European countries).

Price policy as constraining factor

The last, but by no means least important, constraint – or influential factor – to be mentioned on the supply side is price policy. Even if the programmes and services offered are developed in highly professional fashion and have great utility

value for users, this will be of little benefit in terms of diffusion if the price level is prohibitively expensive for the target group in question, or if the overall costs which must be met to benefit from this utility – hardware, software, link-up costs and charges, service provider, programme-server charges etc. – exceed a certain price threshold considered acceptable; the same is true if the potential customers are unclear as to the costs involved.

In the preceding paragraphs we have discussed the constraints on the supply side. Time is required to solve each of these problems and each step forward is contingent on the – more or less successful – solution of other problems. The overall pace of the innovation-diffusion process depends centrally on whether, and to what extent, the actors on the various levels manage to network problem solutions in a compatible and self-sustaining way. The following scenarios of demand trends are set within a theoretical framework provided by innovation-diffusion research.

Private Consumer Acceptance and Demand

Market development strategies and expectations – if they are to be successful or realistic respectively – must be oriented towards the prevailing initial and the foreseeable conditions for development. These conditions can both open up opportunities and also limit the scope for development.

Conditions for diffusion in the private sector

The initial conditions for the diffusion of the demand for multimedia by private households include, besides the current supply of goods and services and the endowment of private households with appliances and connections, structural characteristics of the private demand segment – age structure, education structure, income and expenditure structures, social milieu structure etc. – which together determine the degree of acceptance.

The most important conditions for the on-going development of private demand are: the leading macroeconomic aggregate variables (GDP, private consumption), independently of this, spending on media and communication goods and services over time, changes in leisure time and media-usage time and diverse factors, some of them supply-dependent, influencing the acceptance level.

Variations across Europe

It is immediately apparent that both the initial and the development conditions for diffusion exhibit an enormous degree of variation across the European countries (and beyond). For this reason alone, a cross-national comparative presentation would go far beyond the bounds of this paper. An additional factor in this context is that current, internationally comparable data on most of these conditions are not available or can only be obtained and processed at great cost in terms of resources. It is for these reasons that the diffusion scenario is oriented primarily towards Germany by way of a case study.

The initial endowment of German households with multimedia appliances and connections can be illustrated statistically. The following figures have been collated from secondary sources for Germany as of the end of 1995 (Figure 2.5):

Figure 2.5: The Initial Situation for Consumer Multimedia Markets (Germany end of 1995)

Market segments	1995 (millions)	Household density (%)
Online		
Cable connections (incl. shared aerials)	15.8	43
Satellite reception	9.9	27
Pay TV subscriptions	1.0	3
Internet online participants	1.5	4
Terminal appliances		
PCs	9.2	25
Multimedia PCs (with CD ROM)	3.7	10
PC with modem	1.7	5
Video game consoles*	7.5	20
Total households	36.7	100

These figures can be compared with the results of a recent international survey conducted by the IriS Institutes (Figure 2.6):

Figure 2.6: International Comparison of Private Household Multimedia Endowment

Countries	PC ownership (%)	Modem at home(%)	Internet access at home (%)	Acquaintance with Internet / WWW (%)
Australia	44	10	5	81
USA	37	19	8	85
Canada	36	18	8	82
Mexico	32	9	2	59
Netherlands	41	9	4	84
Switzerland	41	9	3	70
Sweden	32	9	5	91
Finland	31	10	4	81
Germany	27	6	2	58
Great Britain	26	5	2	74
France	17	3	1	69
Spain	21	2	n.a.	44
Italy	17	2	1	55
Portugal	14	2	n.a.	56
Cyprus	13	4	1	39
Greece	13	3	1	56
Turkey	9	2	1	57

Australia leads in PC density, the US and Canada in Internet access

There are substantial differences in the German figures for PC and modem ownership and Internet access. Different figures describing the present situation are also likely to be the case for other items and for other countries. Irrespective of the uncertainties of the data, the IriS results permit the following comparative conclusions to be drawn on the state of development in three important sectors of the multimedia market.

Sources

Figure 2.6: IriS-Institute. Figures refer to end of 1995/start of 1996. Basis: Adults aged 18 or over.

- Offline multimedia: In all the countries listed the PC ownership densities show that the critical mass for a self-sustaining diffusion process (around 10%) has been achieved. At the same time, the figures on the number of PCs at the end of 1995 also indicate major differences in the speed with which PCs have been adopted, differences that are clearly contingent not only on purchasing power, but also on the availability and acceptance of "software". All the English-speaking countries (with the exception of Great Britain) and those with a great affinity to English language and culture (e.g. NL, S, SF, CH) exhibit a higher PC endowment than, for instance, Germany, France and the Mediterranean countries.
- Narrowband online multimedia (internet/WWW and online services): The level of acquaintance with internet/WWW exhibits a similar distribution to that of PC endowment. Somewhat surprising are the relatively (i.e. compared with the number of PCs) low level of familiarity in Mexico, Germany and France, to a lesser extent also in Switzerland and Great Britain. One possible explanation is related to the existence of milieu differences between these countries. Except in the USA, Canada, Australia and Finland,[15] household endowment with modems or internet/WWW access are still below the critical mass for a self-sustaining take-off of diffusion. Another striking phenomenon are the still very low figures in the core countries of the EU and in the Mediterranean countries.
- Broadband online multimedia (digital television): Digital television was not launched in Europe until 1996,[16] initially in Italy, followed by France and, at the end of July, Germany. Plans exist to introduce digital Pay TV in Spain and Great Britain. The forecasts for the number of subscribers expected to join by the end of 1996 are unanimously cautious. Here, too, there are substantial differences between the European countries with respect to technical endowment and connection requirements: cable connections or satellite reception (Figure 2.7) and the penetration of (so far analogue) Pay TV subscriptions (Figure 2.8).

Critical mass for a self-sustaining diffusion process: around 10%

These differences in the acceptance of Pay TV are generally explained in terms of national differences in the supply of free television programmes (public or private). The hypothesis is that the better the supply of free TV, the lower the acceptance of and willingness to pay for Pay TV. Yet other factors – such as the charges for public television, disposable income, spending on media and communication as a proportion of private consumption and, more generally, the acceptance of television compared to other leisure activities – are also likely to be relevant.

The current global situation with regard to broadband services[17] for the consumer sector (such as video or media on demand, teleteaching, telelearning, home shopping, interactive video games) has yet to move beyond the stage of trials and pilot projects. In Germany the planned pilot projects have not even got under way yet or, as in Stuttgart, were cancelled after numerous delays. The picture derived from the (provisional) results published of field trials in pioneer

15 Clearly, as is the case with mobile phones, the settlement patterns and density of a country and the costs of telecommunication clearly play a role in determining the speed at which communication technologies are adopted.
16 In the USA, by contrast, Direct TV commenced operations at the end of 1994.
17 Generally termed "interactive television".

TV reception: cable highest in the Netherlands, satellite in Croatia

Figure 2.7: How TV-Households in Europe Receive their Programmes

Countries	TV households (mio.)	Reception via ... Satellite in %	Sat. Cable in %	Antenna in %
Austria	3.0	35	30	35
Belgium	4.0	6	89	5
Croatia	0.7	50	7	43
Czech Rep.	4.0	22	9	69
Denmark	2.3	42	20	38
Finland	2.0	5	41	54
France	20.8	5	9	86
Germany	32.1	29	44	27
Hungary	3.7	25	31	44
Ireland	0.9	8	47	45
Italy	20.2	2	0	98
Luxembourg	0.1	6	90	4
Netherlands	6.3	5	91	4
Norway	1.8	17	35	48
Poland	11.7	15	20	65
Portugal	3.1	8	0	92
Slovakia	1.7	43	16	41
Slovenia	0.7	25	40	35
Spain	11.7	6	3	91
Sweden	3.9	12	48	40
Switzerland	2.9	9	80	11
UK	22.6	15	5	80

countries (USA, Canada, Great Britain, Japan, Hong Kong) is extremely heterogeneous, a fact that points to sharp socio-cultural differences in acceptance. Having said this, the current levels of acceptance, willingness to pay and utilisation of video on demand, for example, would not appear to be sufficient to ensure self-sustained economic development[18] in the foreseeable future.

In order to complete our description of the initial situation, it is necessary to specify the "acceptance potential" for multimedia and its distribution within the population. Two premises can be taken as a point of departure here.

- The multimedia dynamic increasingly leads to "cultural lag": attitudes, needs and skills change more slowly than technological and economic progress and, moreover, follow a rather "capricious" learning curve.
- There is no such thing as "society" or "*the* consumer". Rather, all countries are characterised by a multiplicity of different social milieus, life-styles and target groups. Accordingly, the conditions required for acceptance (learning requirements, willingness to learn, skills, endowment and utilisation requirements) are fragmented. This asymmetric distribution also applies to purchasing power.

18 In view of the enormous costs of setting up fully interactive broadband networks and the high costs of developing broadband services.

Sources

Figure 2.7: SES/MGM MediaGruppe München (1995)

Figure 2.8: Number of Subscribers to Movie Pay TV Channels

Countries	Name	Launch	Subscriber 1994 (in 1000)	TV households 1994/95(in mio.)	TV-household Penetration %
Austria	Premiere	2/91	41.0	3.0	1.4
Belgium	Filmnet	12/85	180.0		4.5
	Canal Plus	9/85	161.7		4.0
Denmark	Filmnet	9/85	80.0	2.3	3.5
Finland	Filmnet	6/86	48.0	2.0	2.4
France	Canal Plus	11/84	3,870.0	20.8	18.6
Germany	Premiere	2/91	861.6	32.1	2.7
Greece	TV Plus	12/88	6.0	2.0	0.3
	Filmnet	10/94	3.0		0.1
Italy	Telepui	6/91	650.0	20.2	3.2
Netherlands	Filmnet	3/85	180.0	6.3	2.9
Spain	Canal Plus	9/90	969.6	11.7	8.3
Sweden	Filmnet	6/86	215.0	3.9	5.5
	TV1000	8/89	302.0		7.7
UK	The Movie Channel	3/90	356.0	22.6	1.6
	Sky Movies	2/89	560.0		2.5
	Sky M. TMC	9/90	2,140.0		9.5
Norway	Filmnet	9/87	38.0	1.8	2.1
Switzerland	Teleclub	11/81	90.3	2.9	3.1
Total			10,752.2	135.6	7.9

France leads in Pay TV penetration

The hypothesis of a milieu-specific acceptance differential receives support from empirical data on the socio-demographic composition of innovators and early adopters. The differences with respect to the composition of the population as a whole are substantial and, so far at least, have converged only slowly.

On the basis of recent milieu studies conducted in Germany,[19] the potential acceptance of multimedia in the various milieus is likely to be as follows (Figure 2.9).

Social milieus and different acceptance of multimedia

Figure 2.9: Distribution of Social Milieus in the German Population
(Adults aged 18 and over)

Social milieus	% share	% share Absolute number (millions)	Willingness to accept "multimedia" (1995 -2000)
"Niveau" milieu	7	4.6	low
"Self-realisation" milieu	15	9.8	medium
"Harmony" milieu	24	15.7	very low
"Integration" milieu	23	15.0	low
"Entertainment" milieu	30	19.3	high
Total	100	65.4	low/medium

19 C.f., for example, G. Schulze, Die Erlebnisgesellschaft, and the milieu studies conducted by Sinus.

Sources

Figure 2.8: Screen Digest, 11/95, page 250 and calculations by the author.

"There is no such thing as 'society' or 'the consumer'. Rather, all countries are characterised by a multiplicity of different social milieus, life-styles and target groups."

Despite the ambivalence of the multimedia-acceptance indicators for the various milieus, the data permit the following broad conclusions:

- the multimedia acceptance level of around 55% of adult Germans is low or very low (niveau, harmony and integration milieus);
- a medium-level willingness to accept multimedia can be assumed for around 15% of the adult population (self-realisation milieu);
- around 30% of the population can be assumed to have a high level of potential multimedia acceptance (entertainment milieu).

In sum, the broadest possible potential acceptance for multimedia goods and services in Germany – at present and in the coming years – applies to around 45% of the adult population.

In the longer term, i.e. after the turn of the century, however, there is considerable evidence for a broadening of the acceptance potential.

- For years now media utilisation and spending structures have been shifting in favour of electronic media. This trend will continue.
- An ever increasing proportion of the population utilises a PC and other electronic means of communication at work. IT knowledge and equipment are increasingly required in schools, universities and in vocational training. The experiences made and the skills acquired in education and working life will diffuse into private use.
- For many children and adolescents audiovisual and interactive communications skills are already as much a part of daily life as reading and writing. The multimedia and interactive qualities of video and computer games are transposed on to other application areas as a "required norm".
- The didactic advantages of multimedia communication and information acquisition (improved concentration, higher retention and remembrance values, better motivation etc.) are undisputed.
- The requirements made of individuals by an increasingly complex information and media environment are growing incessantly. Multimedia-based communication may help to raise the capacity for information processing, increase the selectivity of access and processing and raise the value in terms of experience and entertainment.

No fundamental and permanent limitations to acceptance

Taken as a whole this implies that multimedia is in complete harmony with the long-term trend characterising the development of modern societies: globalisation, differentiation and individualisation. It cannot be expected, therefore, that fundamental and permanent limitations to acceptance will occur. On the other hand, the process of acceptance diffusion will follow a course that will extend across generations (long learning curve) and can only be influenced from the supply side (through price, marketing etc.) to a limited extent.

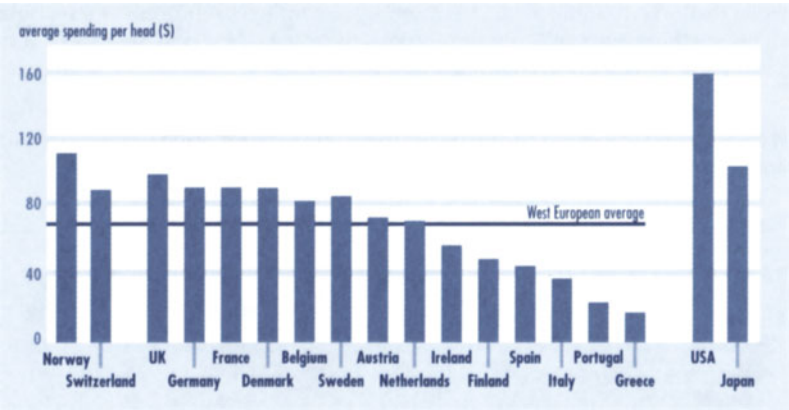
An additional factor limiting the diffusion of private consumer demand for multimedia is the development of disposable income, in particular spending on media and communication.

Prior to any prognosis, any attempt to quantify private consumer demand for media and communication goods and services must first grapple with the problems of statistical definitions and data access.[20] Agreement has not yet been reached on a generally accepted and thus comparable definition of a media and communication sector of the economy – this is true of all countries – enabling spending areas to be allocated accordingly. The sector and its constituent branches have so far not been covered in any unambiguous way by the statistics and thus have been "indescribable".

No comparable definition of a media and communication sector of the economy across countries

Attempts to generate comparable sets of data have only been made for subareas. For instance, the magazine *Screen Digest*, in its March 1996 issue, published the following comparative synopsis of consumer spending on audio-visual software (audio and video recordings, cinema-going and Pay TV) for 1994. According to these figures the average European spends around $70 a year on audio-visual software. The differences between the European countries in this respect are substantial (Figure 2.10).

Figure 2.10: Consumer Spending per Head 1994



Particularly striking is the fact that the southern European countries are substantially below the European average, and that this average, in turn, is 50% below the comparable figure for the USA.

For Germany, the first attempt to derive as complete and consistent a statistical picture of private household spending on media *and* communication as possible was undertaken within the framework of DIW/Prognos study conducted on behalf of the German Ministry of Economics. According to this study media

20 Cf. DIW, "Gesamtwirtschaftliche Position der Medien in Deutschland 1981-1992", Berlin 1994. (Beiträge zur Strukturforschung, vol. 153.)

Sources

Figure 2.10: Screen Digest March 1996

Household spending on media and communication

and communications spending by private households amounted to around DM 100 billion in 1992; by 1994 this had increased to around DM 107 billion. Figure 2.11 indicates the way in which this spending is structured (figures in %).

Figure 2.11: Structure of Germany Household Media and Communication Spending
(in %)

	1992	1994
Media spending	71	67
• Hardware	25	19
• Software total	46	48
- electronic media	26	28
- print media	20	20
Communication spending	29	33
Total in DM billions (= 100)	99.2	107.0

On these figures around 2/3 of media and communication expenditure is accounted for by the media branches. Communication spending represents only one third, although it is increasing faster than that spending on media. Within the media sub-sector, spending on software is increasing substantially faster than that on hardware. In relative terms spending on print media has remained constant, while that on electronic media has risen significantly. This process of structural change within media and communications spending – observed here over a very short period – is likely to continue in the coming years.

Long-term prognoses

On the basis of the most recent macroeconomic long-term prognoses (*prognos world report '96*), the following trends are to be expected regarding media and communications expenditure by private households (Figure 2.12).

Figure 2.12: Private Household Media and Communications Expenditure
(Germany, nominal in DM billions)

				Index (1994 = 100)	
DM billions	1994	2000	2010	2000	2010
Media spending	71.7	95.9	158.7	134	221
- electronic media	50.3	68.3	110.3	136	219
• Hardware	20.3	26.0	33.5	128	165
• Software total	30.0	42.3	76.8	141	256
- Print media (incl. electronic publishing substitution)	21.4	27.6	48.4	129	226
Communication spending	35.0	50.4	93.1	144	266
Media and communication spending	106.7	146.3	251.3	137	236
Media and communications spending/household					
• DM p.a.	2,907	3,954 (+1,047)	6,751 (+2,797)	136	232
• DM per month	242	330	563	136	231

In the year 2000 each household will, on average, have around DM 1,000 p.a. (around DM 90 per month) more for media and communications at its disposal than in 1994. By the year 2010 this scope for additional spending on 1994 figures amounts to DM 3 840. It should be noted, however, that these are nominal figures, i.e. that they contain price increases. Moreover, these average figures must not be allowed to obscure the fact that the forecast scope for additional spending is distributed asymmetrically across household income and purchasing power categories. It would, for example, not be permissible to extrapolate the scope for financing Pay TV on the basis of these average figures.

Substantial additional scope for purchasing new multimedia goods and services

Even so, the fact remains that private households will enjoy a substantial additional scope for purchasing new multimedia goods and services, without this necessarily exerting a deleterious effect on the demand for existing media products. At the same time, this view, derived from the model simulation, of course needs to consider the fact that the existing media will have to compete for this additional spending potential in order to generate additional growth and prevent the loss of market shares and substitution processes.

Method of prognoses

The forecast of media and communications spending derived from macroeconomic variables provides a framework for a more highly differentiated extrapolation for turnover for the various spending items, the results of which are presented in aggregate form above. These prognoses are generated with the help of a multi-stage, iterative process. Firstly, prognoses are made of household endowment with multimedia appliances and connections. Market volumes and turnover are initially calculated at present-day prices and then converted into nominal figures. An analogous procedure was followed in order to extrapolate charges and software expenditure as a dependent variable of purchasing power and utilisation. It should be noted that the "early adoptors" spend considerably more then the "majority" that follow.[21]

The prognoses for endowment trends (Figure 2.13) are used as guide-line variables to determine the possible areas of substitution for other spending items (e.g. video, audio recording media, video games, newspapers, magazines, books, brochures).

Figure 2.13: Scenario 2000/2010: Household Endowment with Multimedia Appliances and Connections in Germany

as a % of all households	1994	1995	2000	2010
Cable connection	40	43	52	61
Satellite reception*	23	25	34	37
Digital TV reception	0	0	5	50
Video on demand	0	0	1	25
Multimedia PC	17	25	43	80
PC with online connection	2	5	25	70

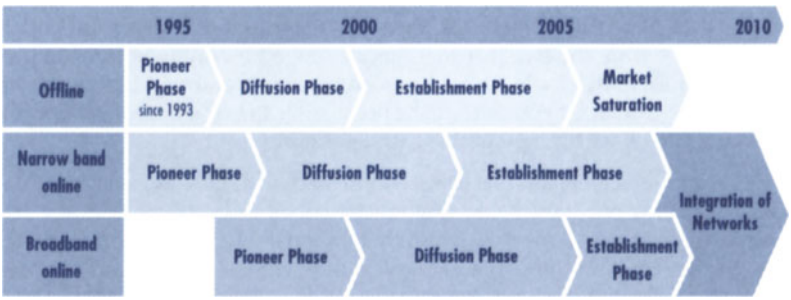
21 An example of this is the introduction of CD. In 1984, with a household density of 0.5%, average CD expenditure was DM 800 p.a.; in 1993 the household density was around 50% and average spending on CD DM 230.

* Individual and joint reception

"The road to the multimedia information society ... must ... be co-financed, particularly in the start-up phase, to a significant extent by firms and the public sector."

The diffusion scenario for the private household sector for the three multimedia market segments can be summarised as follows (cf. Figure 2.14):

Figure 2.14: Introduction Phases Digital Media



On the basis of the scenario for the diffusion of private demand in Germany, a number of more general conclusions can be drawn that are likely to also apply to other countries:

- Although the initial situation in the European countries varies greatly, in the longer term the pattern of diffusion as multimedia markets develop is likely to be convergent. The existing time lags will prove persistent, however.
- The heterogeneity of social milieus, the importance of the elderly as a proportion of the population and the asymmetric distribution of purchasing power restrict the acceptance and demand potentials in the initial phase of market development (up to around the year 2000) to less than 50% of the population. An expansion of these potentials is dependent on the behaviour of the different generations and is contingent on favourable economic trends.

Increase in purchasing power not sufficient for a rapid diffusion of multimedia demand in all segments of the multimedia market

- The income at the disposal of private households will continue to grow, albeit more slowly than in the 1980s. The increase in purchasing power is far from sufficient, however, to permit a rapid diffusion of multimedia demand in all segments of the multimedia market. It is also unlikely that spending will be restructured in any substantial way in favour of multimedia products and services. It is realistic to expect – contingent on the diffusion of the required technical endowment – relatively slow substitution processes within the structure of the media and communication budget.
- This implies that the road, widely considered desirable, to the multimedia information society cannot be taken by the private consumer sector alone, but must rather be co-financed, particularly in the start-up phase, to a significant extent by firms and the public sector.

Acceptance by the Business and Public Sectors

Just as in the case of private consumer demand, the problem of defining and delineating the relevant items of media and communications spending also applies to private sector firms. Uniform and comparable conventions are to be

found neither at national not nor EU level. The differences in the various expectations and prognoses of market volumes that have been put forward are correspondingly large.

For Germany the above-mentioned DIW/Prognos study attempted to collate data on media and communications spending by private sector firms and by the public sector as exhaustively as possible and in clear distinction to spending by private households.[22] According to the study, media and communication spending by the business sector was, at around DM 211 billion in 1992, around twice as high as that by private households. This spending was structured as follows:[23]

- Data processing and office communication, at just under 27%, constitutes – at first sight – the largest cost factor.
- This is followed in second place by spending on advertising media and direct advertising (25%). If, in addition, the other "below the line" advertising and marketing activities are included, what one might call "influential communication" accounts, at substantially more than 30%, for the greatest proportion of the total.
- Telecommunication costs, at 17%, are in third place.
- Printed products and print communication account for just under 12%.
- Expenditure on electronic information services (offline and online) represented, in 1992, less than 1% of all communications spending.

Internal and external communication and advertising will continue to increase

It is to be expected that both internal and external communication and the use of advertising will continue to increase. The following reasons can be put forward for this:

- National and international competition is increasing; "performance competition" is increasingly being supplemented by and replaced by "communications competition".
- There will be a further increase in the number of advertising media and forms.
- Supranational, national, regional and local advertising media and activities will become increasingly highly differentiated.
- The number of products for which advertising is required will increase as consumption becomes increasingly individualised.
- The importance of the additional utility value of products will increase and this additional utility value can only be mediated through communication.
- The number of organisations requiring advertising will continue to rise as increasingly non-profit organisations discover the utility of advertising (publicity work).
- The spectrum of advertising will continue to broaden: from sales advertising to public relations and sponsoring.
- The acquisition and processing of information will increasingly be divorced from the sphere of in-house production and will be replaced by market activities, among which advertising will play an important role.
- On top of all this comes the increased need for vocational further training, which intrinsically requires communication.

22 Cf. DIW/Prognos, op. cit., p. 97.

23 The structure given in the "Kommunikations-Monitor II" (edited by the BDW et al.) for 1995 differs from that given here. The figures are not comparable due to the incomplete coverage of the BDW study, which omits, among other things, advertising production costs, printing costs, expenditure on books, newspapers and magazines.

Business communication expenditure will grow faster than GDP

As a result of these trends communication expenditure by the business sector is expected to grow at a faster rate than GDP (Figure 2.15). Overall spending is expected to treble by the year 2010.

Figure 2.15: Communication Expenditure by the Business Sector
Germany 1992/2010 (in %)

	1992	2000	2010
Data processing/office communication	27	28	28
Advertising media/direct marketing	25	24	24
Sponsoring, events, trade fairs, etc.	14	15	17
Telecommunication	17	17	17
Printed matter/print communication	13	11	10
Electronic information services (offline/online)	1	2	3
Photo/film	4	3	2
Total (= 100) in DM billions (nominal)	211	365	663

The spending areas recording above-average growth include:

* electronic information services (offline and online) and telecommunication;
* all forms of "below the line" advertising expenditure (direct marketing, sponsoring, events, sales promotion, PR);
* data processing and office communication.

Spending on printing and print media and the field of traditional advertising, on the other hand, will expand at a below-average rate.

These prognoses are based on an extrapolation of trends characterising current structural change. It can be assumed that this structural change is occurring or will begin to occur in similar fashion in the other European countries.

The extent to which multimedia applications will lead to intrasectoral substitution processes within the corporate communications mix depends essentially on three factors:

Three factors for success of multimedia applications

* the extent to which target groups (consumers or other firms) can be reached by these means, i.e. on private household and corporate endowment with multimedia appliances and connections;
* the suitability of multimedia forms of communication for given communicative aims;
* thirdly, on the cost-benefit relation compared with the solutions used so far.

Taking as a point of departure the premise that corporate acceptance and implementation decisions are oriented to a greater degree than in the case of private households to objectifiable cost-benefit relations, demand from the business sector will arise and gain momentum when relative prices change in favour of multimedia applications, whereby their utility (compared to previous solutions) remains constant or rises.

If this assumption is linked to the "accessibility criterion" (i.e. the technical endowment restrictions), it seems likely that commercial multimedia demand will initially focus on offline applications (point of interest/point of sale) and branch-specific and interactive "business-to-business" online applications with a high "image utility value" and corresponding advantages in terms of quality.

In terms of the suitability of the communicative form, the potential for substitution is greatest in the following areas:

Advertising by Post/Direct Marketing	Internet/Online-Adverstising
PR, Sponsoring	Internet/Online-Adverstising
Sales Promotion	POS/POI Multimedia-Systems
Printed Matter	Online Information, Offline Data Media
Books, Newspapers, Magazines	Offline-/Online Data Bank Information
Letter Post	E-mail

Degrees of substitution

In terms of the 1992 figures these areas account together for 28% of overall expenditure on communication. This is the ceiling for the maximum possible degree of intrasectoral substitution. This substitution potential will not be exploited all at once however, as substitution is contingent on accessibility.[24] Model calculations of the way in which this potential will be exploited show that at most 24% of the maximum potential for substitution will have been utilised by the year 2000. Even by the year 2010, the substitution process will have only covered around 55% of the theoretically possible ground.

Data on overall public sector demand for media and communication goods and services is subject to even greater reservations than in the case of the two demand segments discussed so far. International comparisons cannot be conducted without resource-intensive additional research.

A rough estimate of public sector demand for 1992 has been made for Germany, once again in the DIW/Prognos study cited above (Figure 2.16).

Figure 2.16: Public Spending on Media and Communications Goods and Services – Germany

Media and communications goods	DM billions	%
Mass media	1.4	12
M&C technology	2.4	21
Communications services	7.7	67
Total	11.5	100

According to these figures, German public spending on media and communication goods and services amounted to around DM 11.5 billion in 1992. This figure does not include government PR and advertising expenditure. If these items are included, public spending rises to around DM 15 billion. This

24 For example, a maximum of around 25% of direct marketing/advertising by post can be replaced by online advertising (by the year 2000), due to the number of households that will have an online link-up by that date.

is equivalent to around 7.0% of communications spending by firms and around 1% of overall public spending.

The *Kommunikations-Monitor* puts total communications expenditure by government at DM 20.2 billion in 1995.

If the ratio between public and commercial expenditure were to remain constant, public spending on media and communications would be expected to reach around DM 25 billion in the year 2000 and DM 46 billion in 2010.

Clearly, it must be doubted whether, given the current state of German government finances, such rates of expenditure growth can be realised. On the other hand, it must also be doubted whether such a demand trend would suffice to bring about a fundamental improvement in the still very low density of media and communications technology in public sector work and training places.

Growth and Employment in the Media and Communication Sector

Indicators to Measure Sectoral Growth

Best indicators: gross value added and the proportion of the overall labour force

In order to quantify the effects of a change in the demand for media and communication goods on the macroeconomic importance of the sector in which these goods are produced, suitable indicators must first be found. The most suitable for this purpose is the gross value added of the media and communication sector, i.e. the contribution it makes to GDP. With regard to the employment aspect, the proportion of the overall labour force employed in this sector is also of special interest. At least one of these two indicators is used in most of the quantitative studies dealing with the past and future development of the media and communication sector. It is important to note in this context that the value added and the employment level of a sector can increase without the relative macroeconomic importance of the sector necessarily increasing. In other words, a distinction must be made between absolute growth and disproportionably rapid growth with respect to the economy as a whole.

Misleading deficiencies in the studies

A number of studies refrain, however, from accurately calculating the value added by the media and communication sector, rather drawing direct conclusions from the development of the markets for media and communication goods (turnover) as to the increase in value added and employment. Yet these variables need not necessarily move in parallel. On the contrary, for a number of reasons domestic demand, the domestic value added of the sector in question and sectoral employment may move along different trajectories:

* The additional demand for media and communication products can be met solely or partially by imports, if the international competitive position of the media and communication sector deteriorates in a given country.

* Changes in production processes in the media and communication sector can lead to a reduction in the degree of vertical integration of the sector, so that some of the value added is forced out into other sectors of the economy; it is thus possible for the direct contribution by the industry to GDP to decline although turnover is rising.
* The media and communication sector is characterised, as are all other sectors, by continuous productivity growth, so that in future the same value added can be generated by fewer employees.

Thus prognoses of the growth of the media and communication industry that fail to take account of such effects must therefore be treated with caution.

Finally, the prognosis for sectoral growth depends not least on the delineation of the media and communication sector. If those areas that are in future likely to be affected by negative substitution effects are included, the growth results calculated are clearly going to be lower than if these areas – examples include the print media or postal services – are excluded from the analysis.

Delineation of the media and communication sector

In the mid-1970s a statistical concept was developed in the USA to measure the contribution to GDP made by the so-called primary information sector, whereby under this rubric all those branches of an economy producing – in the widest sense of the word – information goods were to be subsumed: either information itself or the means to its production, processing and dissemination.[25] This very broad definition encompassed, for example, the entire field of industrial electronics (e.g. measurement and metering technology, medicinal technology) and the field of non-technical communication (e.g. market research, legal and management consultancy, training). The OECD used this concept until the mid-1980s as a basis for international comparisons of the "information-intensity" of the economies of OECD countries.[26]

It is extremely difficult to forecast the specific effects of the new media and communication technologies on the growth of such a broadly defined information sector. Accordingly the DIW/Prognos study for Germany mentioned earlier sought to estimate quantitative employment effects for a more narrowly defined media and communication sector.[27] The sector was defined as follows:

* firms whose central field of activity is the production or distributions of mass media (print and electronic media) constitute the sub-sector "media";
* firms producing or distributing electronic consumer goods, office machinery and data processing equipment, information-technology appliances and photo-technical and photo-chemical products form the sub-sector "media and communications technology";
* firms whose activities centre on producing DP software, software services and telecommunications and postal services constitute the "communications services" sub-sector.

25 Cf. Porat, M.U., The Information Economy, Vol. I and II, Stanford University, Ph. D. 1976.
26 OECD/ICCP (Ed.), Information Activities, Electronics and Telecommunications Technologies. Impact on Employment, Growth and Trade, Vol I+II, ICCP Series No. 6, Paris 1991.
27 Schrape, K./Seufert, W./Haas, H. et. al., Künftige Entwicklung des Medien- und Kommunikationssektors in Deutschland. Berlin 1996. (Beiträge zur Strukturforschung, vol. 162).30 EU-Kommission, Panorama der EU-Industrie, Brüssel 1994.

This relatively broad definition of the M&C sector was selected in order to take account of the fact that the new M&C technologies will both weld together previously specialised branches (consumer electronics, data technology, DP technology, photo-technology) and will also partially dissolve the boundaries between mass and individual communications services. Moreover, this approach means that the analysis encompasses not only those branches in which the new multimedia markets offer a growth potential, but also those branches that are likely to be most severely affected by substitution effects (e.g. photochemical and postal services).

The inclusion of these areas affected by substitution effects and the inclusion of firms specialised in the distribution of media products and media and communication technology distinguishes this definition of the media and communication sector from that utilised in other recent studies of the future of this sector. This means that direct comparison of the results is not possible, although the definitions do not differ to such an extent that no comparisons at all are admissible:

Definition of "TIME branches"

An ADL study conducted in 1996 forecast the employment growth for the so-called "TIME branches" for Germany to the year 2010. The definition includes audiovisual and print media, telecom services and transmission technology, data-processing technology and data-processing services and, as a separate area, electronics.[28]

This definition is largely congruent with the definition of the so-called "information sector" used for many years by the EU Commission. This definition explicitly encompasses the field of consumer electronics.[29]

The CEA used a similar definition – although with rather different subdivisions – in its 1994 study of the US telecommunications industry mentioned above. The definition distinguishes between "conduit" (telecom services and technology), "content" (audiovisual and print media) and "computer" (data-processing technology, software and services).

Japanese definition unclear

It is unclear what definitions were used in the study by the Japanese telecommunications council in 1994. On the one hand the study talks of a new multimedia industry, on the other employment growth is forecast for a "telecommunications sector", which remains unspecified.

Expected Employment Trends in the Media and Communication Sector as a Whole

In terms of the available data for the period 1992 to 1995 on value added and employment, the media and communication sector cannot be considered as one of the most important sectors either in the EU or in the USA.

On the definition of the sector used in the DIW/Prognos study, in Germany around 1.9 million people were employed in this sector in 1992. This represented 5.3% of total employment, a figure that was slightly lower than the sectoral value-added share of 6.1%. Of these employees around a quarter were employed in

28 A.D. Little, Innovation und Arbeit für das Informationszeitalter, Berlin 1996.
29 EU-Kommission, Gemeinschaftsprogramm Info 2000, KOM (95).

audiovisual and print media firms, around 30% in the production and distribution of media and communication technology and more than 45% in the telecom, postal and data-processing services (cf. Table 3.1).

Table 3.1: The Media and Communications Sector and its Subsectors 1980 to 1992

	West Germany						Germany
	1980	1982	1984	1986	1988	1990	1992
Gross Output* in % of M&C total							
Media	33.8	34.0	33.5	33.0	32.6	32.1	31.3
M&C technology	40.2	38.0	39.2	40.0	39.6	40.5	40.3
Communications services	26.0	28.0	27.3	27.0	27.8	27.4	28.4
M&C sector, total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Production	77.1	76.2	77.4	76.5	74.7	72.1	72.1
Distribution	22.9	23.8	22.6	23.5	25.3	27.9	27.9
Value added* in % of M&C total							
Media	26.7	26.7	27.6	26.8	27.1	27.3	26.8
M&C technology	28.4	26.0	25.8	27.0	25.7	25.8	24.9
Communications services	44.9	47.3	46.6	46.2	47.2	47.0	48.3
M&C sector, total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Production	90.9	90.5	91.5	90.9	90.0	88.3	88.1
Distribution	9.1	9.5	8.5	9.1	10.0	11.7	11.9
Employment in % of M&C total							
Media	28.1	28.1	27.3	26.8	27.2	27.7	26.7
M&C technology	34.0	32.2	31.3	30.8	30.8	31.1	29.0
Communications services	37.9	39.6	41.5	42.5	42.0	41.3	44.3
M&C sector, total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Production	86.6	85.4	87.4	86.4	85.0	83.1	82.7
Distribution	13.4	14.6	12.6	13.6	15.0	16.9	17.3

If those employed in the trade sector, the photographic industry and postal services are excluded from the figures, the number employed in the sector falls to around 1.2 million, i.e. to around 3.5% of total employment. This figure is the same as that calculated for the so-called telecommunications industry (conduit, content and computer) in the USA by the CEA study (1993). It is slightly higher than the figure of 3.1% for the EU 15 in 1993 given by the EU Commission for the so-called information sector.[30] Comparable figures for Japan are not known (Table 3.2).

This relatively minor employment share stands in contradiction to the frequent claim that the media and communication sector has by now drawn level with the automobile industry in terms of economic importance. The CEA, for instance, postulates that the telecommunications industry accounts for a "share"

30 EU-Kommission, Panorama der EU Industrie, Brüssel 1994.

Sources

Table 3.1: Statistisches Bundesamt; DIW calculations.

* At current prices.

Table 3.2: Media and Communications Employees
as a % of Total Employment

	Definition of sector	Region	Year	Sectoral employment (mill)	% Share
DIW/Prognos (95)	M&C sector	Germany	1992	1,9	5,3
DIW/Prognos (95)	(excl. trade, post etc.)	Germany	1992	1,3	3,5
EU-Commission (94)	Information sector	EU-15	1993	4,5	3,1
CEA (94)	Telecommunications industry	USA	1993	3,8	3,5

of 9% of US GDP. In a recent study conducted by Booz, Allen and Hamilton, a GDP "share" of 10% was calculated for multimedia-relevant areas for Germany in 1994.[31] However, in these and a number of other cases, the figures are the result of a statistically invalid comparison between sectoral turnover figures and national GDP, as an indicator of value added. This seriously exaggerates the importance of the sector. If, namely, one were to sum the turnover of all the sectors of the economy, in western industrialised countries the resultant figure would be between 2 and 2.5 times the value for GDP, as in this value-added indicator the inputs drawn from other sectors are subtracted in each case. Allowing for this fact, the media and communication sector accounts for around 3.5 to 4% of value added in the USA, i.e. a figure broadly in line with its share of total employment.

Relatively minor employment share – comparison to automobile industry result of miscalculation

Although, on these figures, the media and communications sector was of roughly equal relative importance in the EU and the USA in the early 1990s, the rate of growth in the two regions had been very different during the 1980s.

Patterns of employment growth in the US

Between 1977 and 1992 the USA experienced strong employment growth in the sector as a whole, amounting to almost 50%. Against this background absolute employment in telecom services (telephone companies, mobile phone and cable network providers) actually declined slightly. The increase was concentrated in the so-called "copyright industries" (audio-visual media, print media, online services and software production). This sub-section of the American media and communications sector also recorded growing export surpluses. US producers of media and communications technology, on the other hand, have declined in importance[32]: increasingly, consumer electronics and telecom terminal appliances, in particular, but also simple data-processing hardware are being purchased abroad.

In Germany, too, employment in the media and communications sector increased by almost 50% – in absolute terms by 0.55 million – between 1980 and 1992. This increase is, however, largely due to the increase in the size of the economy as a whole resulting from unification with the former GDR. In the absence of unification, employment growth would have been of the order of 25%, i.e. substantially less than in the USA. One reason behind this is the sharp increase in Germany's balance of trade deficit in media and communication goods. In 1980 Germany actually achieved a surplus in this field of DM 2 billion; by 1992

31 Cf. Booz, Allen & Hamilton, Zukunft Multimedia. Frankfurt/M. 1995.
32 OECD (Ed.), Restructuring in Public Telecommunications Operator Employment, Paris 1995.

Table 3.3: Foreign Trade in Media and Communication Goods 1980 to 1992
in DM billion at current prices

	West Germany						Germany	
	1980	1982	1984	1986	1988	1990	1992	(1980=100) 1992
	Media					1980 = 100		
Gross output*	45.2	49.3	55.9	62.8	71.3	86.4	104.4	230.8
Exports	1.8	2.0	2.6	3.4	3.8	4.7	5.2	290.7
Imports	1.3	1.4	1.8	2.0	2.7	4.2	5.8	433.4
Domestic availability**	44.8	48.7	55.2	61.4	70.3	85.9	105.0	234.4
Export share (in %)	4.0	4.1	4.6	5.3	5.3	5.4	5.0	125.9
Import share (in %)	3.0	2.9	3.2	3.2	3.9	4.9	5.5	184.8
	M&C technology							
Gross output*	41.9	40.5	51.1	58.4	60.8	66.5	80.1	191.2
Exports	14.9	18.1	22.7	28.0	29.1	33.8	30.6	205.0
Imports	13.6	16.5	23.1	26.6	32.5	42.9	48.3	356.0
Domestic availability**	40.5	38.9	51.4	56.9	64.2	75.6	97.8	241.3
Export share (in %)	35.7	44.8	44.5	48.0	47.8	50.8	38.2	107.2
Import share (in %)	33.5	42.5	44.8	46.7	50.6	56.7	49.4	147.5
	Communications - services							
Gross output*	44.3	52.1	58.1	65.9	78.2	93.8	119.6	269.7
Exports	1.3	1.7	1.8	2.1	2.4	2.5	3.6	270.3
Imports	1.0	1.8	2.0	2.3	2.5	3.4	3.8	364.9
Domestic availability**	44.1	52.2	58.3	66.2	78.4	94.7	119.8	272.0
Export share (in %)	3.0	3.2	3.1	3.2	3.0	2.7	3.0	100.2
Import share (in %)	2.4	3.4	3.5	3.5	3.2	3.6	3.2	134.2
	M&C goods, total							
Gross output*	131.5	141.9	165.1	187.0	210.3	246.8	304.1	231.3
Exports	18.1	21.8	27.1	33.5	35.2	41.1	39.4	218.3
Imports	15.9	19.7	26.9	30.9	37.8	50.5	57.8	363.0
Domestic availability**	129.4	139.8	164.9	184.5	212.8	256.3	322.6	249.4
Export share (in %)	13.7	15.4	16.4	17.9	16.8	16.6	13.0	94.3
Import share (in %)	12.3	14.1	16.3	16.7	17.8	19.7	17.9	145.6

Trade deficit in media and communication goods has widened

the deficit had widened to DM 18.5 billion, of which DM 17.5 billion alone was on trade in media and communications technology. In this regard Germany can be taken as representative of virtually all the EU countries (Table 3.3).

Within the framework of the DIW/Prognos study model calculations were conducted of the development of the German media and communication sector from the year 2000 to 2010. The calculations were based on past development trends in the German media and communication sector and the scenarios, presented in the previous section, of the demand prospects for media and communi-

Sources

Table 3.3: Deutsche Bundesbank; Statistisches Bundesamt; DIW calculations.
* Gross output of M&C production companies.
** Gross output minus exports plus imports.

cation goods. For the prognoses it was assumed that the export shares remain largely constant – as they have done so since 1980 – and that import shares no longer increase, but rather remain at their 1992 level. Under such conditions, the study concluded that while the gross value added of the media and communication sector at current prices – i.e. including the effect of price rises – will increase by the year 2010 by 180% to around DM 485 billion, this increase does not exceed that of German GDP as a whole (Table 3.4).

Table 3.4: Value Added by the M&C Sector 2000/2010 in Germany
DM billion in % 1992 = 100

	1992	2000	2010	1992	2000	2010	2000	2010
Media, total	47	75	139	27.0	27.3	28.7	159.6	295.7
Production	41	66	124	23.6	24.0	25.6	161.0	302.4
Distribution	6	9	15	3.4	3.3	3.1	150.0	250.0
Print media	35	52	89	20.1	18.9	18.4	148.6	254.3
Production	30	45	77	17.2	16.4	15.9	150.0	256.7
Distribution	5	7	12	2.9	2.5	2.5	140.0	240.0
Electronic media	12	23	50	6.9	8.4	10.3	191.7	416.7
Production	11	21	47	6.3	7.6	9.7	190.9	427.3
Distribution	1	2	3	0.6	0.7	0.6	200.0	300.0
M&C technology	43	64	99	24.7	23.3	20.4	148.8	230.2
Production	28	42	64	16.1	15.3	13.2	150.0	228.6
Distribution	15	22	35	8.6	8.0	7.2	146.7	233.3
Communications services	84	136	247	48.3	49.5	50.9	161.9	294.0
Production	174	275	485	100.0	100.0	100.0	158.0	278.7
Distribution	153	244	435	87.9	88.7	89.7	159.5	284.3
M&C sector, total	21	31	50	12.1	11.3	10.3	147.6	238.1

Highest growth expected in electronic media and in communication services

Moreover, due to productivity growth the level of employment in the media and communication sector will rise to a far lesser extent than output. Overall, an increase of only around 10% to 2.1 million is expected. Between 1992 and the year 2000 employment growth is calculated to be just 5%. The ADL study conducted in 1996 comes to similar conclusions for the so-called TIME branches in Germany: growth of 2% from 1995 to 2000 and of 11% to 2010 (Table 3.5).

Thus both projections are substantially lower than the very much more optimistic expectations for Germany and the EU widely held a few years ago. An ADL study conducted in 1994 considered possible employment growth "due to multimedia" in the media sector of almost 40% to the year 2000 (an increase of 0.75 million employees). For the EU as a whole the same study forecast employment growth to the year 2000 of 3 million, i.e. of almost 60%. Even more euphoric was

Sources

Table 3.4: DIW model-estimations.

Table 3.5: Employment by the M&C Sector 2000/2010 in Germany

	1992	2000	2010	1992	2000	2010	2000	2010
	1000 employees			in %			1992 = 100	
Media, total	509	520	517	26.7	26.3	24.7	102.2	101.6
Production	424	440	438	22.2	22.3	21.0	103.8	103.3
Distribution	85	80	79	4.5	4.1	3.8	94.1	92.9
Print media	416	393	366	21.8	19.9	17.5	94.5	88.0
Electronic Media	93	127	151	4.9	6.4	7.2	136.6	162.4
M&C technology	554	585	623	29.0	29.6	29.8	105.6	112.5
Production	309	315	332	16.2	15.9	15.9	101.9	107.4
Distribution	245	270	291	12.8	13.7	13.9	110.2	118.8
Communications services	845	870	950	44.3	44.1	45.5	103.0	112.4
M&C sector, total	1908	1975	2090	100.0	100.0	100.0	103.5	109.5
Production	1578	1625	1720	82.7	82.3	82.3	103.0	109.0
Distribution	330	350	370	17.3	17.7	17.7	106.1	112.1

a 1993 prognosis by the European Commission for the field of audio-visual media: from an expected doubling of market turnover to the year 2000 it was concluded without further ado that employment would also double.[33]

Employment increase expected for the US overestimated

The model calculations conducted for the USA by the CEA (1994) also arrive at a very large increase in employment in the telecommunications industries. Even in the absence of a government support programme, employment in this sector was to increase by 0.9 million or around 25% by 2003; with the help of the NII initiative employment growth of as much as 1.9 million, around 50%, was thought likely.

Even given the stronger growth trends in the USA, it seems unlikely that such a development will occur. It would require a far faster diffusion of new multimedia applications than seems realistic at present. Similarly, the assumption contained in the report by the Japanese government telecommunications council (1994) that firms producing multimedia products or providing related services will together account for 5.5% of Japanese value added by 2010 needs to be treated sceptically (Table 3.6).

Table 3.6: Prognoses of Employment Trends in the Media and Communications Sector

Source	Definition of sector	Region	Base year	Growth to the year 2000	Growth to the year 2010
DIW/Prognos (95)	M&C sector	Germany	1992	+ 5 %	+ 10 %
	TIME	Germany	1995	+ 2 %	+ 11 %
ADL (96)	Media sector	Germany	1993	+ 40 %	–
ADL (94)	Media sector	EU-15	1993	+ 60 %	–
CEA (94)	Telecommunications industry	USA	1993	a) +25% (to 2003)	–
				b) +50% (to 2003)	–

33 European Commission, The role of the content sector in the emerging information society, in: IMO, Luxemburg, October 1995.

Sources

Table 3.5: DIW model-estimations.

Rapid productivity growth in hardware production

Expected Employment Trends in Various Branches of the Media and Communications Sector

The overall employment trend in the media and communications sector reflects varying trends in the different branches constituting the sector. Above-average employment and value-added growth – given the nature of the new information and communication technologies – is expected primarily in audio-visual media, telecommunication services and software producers. It is widely agreed, on the other hand, that in view of the still extremely rapid productivity growth in hardware production at best a slight increase in employment is likely there. According to estimates by Price Waterhouse, at the start of the 1990s just 3.6 million people were employed in this area – excluding semi-conductor production – throughout the world.[34]

The model calculations conducted within the framework of the DIW/Prognos study suggest that German value added and employment growth in the area of audio-visual media (television, radio, film, music, multimedia offline and online providers) can be expected to exceed that of the media and communication sector as a whole. Employment in this area is calculated to increase by around 35,000 to the year 2000 (35%) and by 60,000 to the year 2010 (60%).

It must be recognised, however, that currently around four fifths of those employed in the production and distribution of mass media work in the printing and publishing fields. Yet print media employment is expected to decline by around 5% to the year 2000 and by almost 10% to the year 2010. This offsets almost totally the rise in employment in the audio-visual sub-sector. In this respect Germany is almost certainly representative of virtually all the western industrialised countries, in which the importance of the print media is still relatively high.

The optimism regarding above-average value-added growth among the providers of telecommunications services is also confirmed for Germany by the DIW/Prognos study. Here, too, though, the picture is not without its shadows. Although value added is expected to grow by an above-average 75% to the year 2000 and by 215% to the year 2010, it must be recognised that this growth will to some extent be at the expense of the postal services and that the employment level will initially decline markedly to the year 2000, and even in 2010 will be around 5% below the 1992 figure.

The reason for this is the huge productivity reserves within Deutsche Telekom, which intends, in the wake of privatisation in 1996, to shed around one quarter of its employees by the year 2000 (around 55,000). Indeed, according to calculations conducted within the EU Information Society Forum, between 250,000 and 300,000 jobs would have to be shed in the national telecom monopolies of the EU countries (Table 3.7) if they were to achieve the turnover per employee figures currently achieved by US telecom service companies.[35] Nor will the emergence of new producers on the market expected following the abolition of network and

34 Price Waterhouse, Employment in IT & T Equipment Manufacturing, o.O. 1992.
35 Forum Information Society, Networks for People and their Communities – First Annual Report to the European Commission, Brussels June 1996.

transmission monopolies at the end of 1997 be able to absorb these job losses. Those countries which have always had private markets for telecom services or which deregulated their telecom markets in the 1980s (USA, Japan, Great Britain) all experienced a marked decline in employment between 1982 and 1992, one which has so far not been reversed.[36]

Table 3.7: Employment Trends in the Telecom Operator Sector

Telecom companies	Employees in 1982 (1000)	Employees in 1992 (1000)	% Change
Great Britain	247	197	-20 %
Other EU-15	770	780	+1 %
Japan	330	253	-25 %
USA	974	881	-10 %

Telecom operator sector: productivity growth in Japan, Great Britain and the US

The third area of the media and communications sector thought likely to have above-average growth prospects is that of data-processing, software suppliers and data-processing service companies. Assuming that the labour-intensive development procedures currently still used in software production are retained, the DIW/Prognos study calculates that German employment in this area will increase by 60,000 by the year 2000 (almost 30%) and by 120,000 or 60% by the year 2010. Controversy rages, however, on whether it will be possible to retain current procedures over such a long period. The expectation has been voiced in certain quarters that this branch, too, will experience a fundamental "productivity revolution" through new programming techniques.[37]

All three examples illustrate that the employment prospects of the media and communication sector are indeed subject to limitations, whether due to substitution effects between old and new media and communication goods, or because of the comparatively large productivity reserves available in the production of certain media and communications products.

The Effects on Employment in the Economy as a Whole

Qualitative Effects – the Dimensions of Potential Structural Change Due to Multimedia Applications

Wherever internal and external communication and the search for and processing of information form a central element in goods and service production, multimedia applications may well lead to changes in work processes, skill requirements or the spatial distribution of employment.

If one looks at the importance of the so-called "information-related occupations" in the economy, the potential for such changes is clearly enormous. Within the framework of the OECD studies mentioned above into the degree to which western industrialised countries could be considered an "information society" in

36 OECD (Ed.), Restructuring in ..., op. cit.
37 See article "Zukunftssoftware", in: Wirtschaftswoche 29 th of June 1995.

Sources

Table 3.7: OECD

the 1980s, a measurement concept was used that focuses on the input side of the production process, more precisely on the contribution made by "information labour" to the output of an economy. The concept was based on a distinction between occupations according to the extent of information-related activities performed and on the proportion of the overall labour force working in information-related occupations. For Germany this quantification approach – which was oriented to the international classification of occupational groups – has been converted by the *Institut für Arbeitsmarkt- und Berufsforschung* (IAB) to fit the occupational classification used in Germany. Based on the responses given in census and sample surveys (*Mikrozensus*) on the main activities performed at work, those occupations in which more than three quarters of those belonging to the occupational category reported that information-related activities formed the core activity were defined as "information-related occupations".[38]

Employment in information-related occupations rose from 18% (in 1950) to 51% (in 1992) – expected to be 55% in 2010

If all those employed in these information-related occupations are brought together in an "information sector", the following trends emerge for Germany: In 1950 just 18% of the working population were employed in information-related occupations; by 1985 this figure had risen to 41% and by 1995 to 51%. Parallel to this trend, the proportion of the labour force working with computers or computer-assisted plant and machinery rose to over 40%. The IAB expects the rate of growth in the information sector to flatten out to the year 2010. By then the proportion of the labour force in information-related occupations is expected to have reached 55%.[39] (Table 4.1)

Table 4.1: Information-related Occupations in Germany 1950-2010
as a % of total employment

	1950	1970	1985	1995	2000	2010
Agriculture	22	8	5	3	3	2
Production	38	40	31	25	23	21
Services	22	24	23	21	21	23
Information	18	29	41	51	53	55

The substantial proportion of employment constituted by information-related occupations – not only in Germany but in many other EU countries – provides an empirical basis for various prognoses according to which the new information and communication technologies could lead to millions of new jobs in Europe in the near future. For even if just one in five information employees were affected by qualitative changes within the coming decade, this would affect between 10 and 15 million workers throughout the EU.

However, the term "new" jobs in this context is misleading. It suggests that each of these new jobs is "additional", a net increase in employment, but this is not necessarily the case. These estimates pertain, in the final analysis, to the quantitative dimension of the structural change on the labour market in the wake of the diffusion of new information and communications technologies. And this is,

38 Cf. Dostal, W.: Der Informationsbereich, in: Mertens, D.(Ed.): Konzepte der Arbeitsmarkt- und Berufsforschung. Nürnberg 1988, p. 858 ff.
39 Cf. Dostal, W., Die Informatisierung der Arbeitswelt – Multimedia, offene Arbeitsformen und Telearbeit. In: Mitteilungen aus der Arbeitsmarkt- und Berufsforschung, No. 4/95, p. 527 ff.

Sources
Table 4.1: IAB

indeed, substantial, as in the longer term each and every information-related occupation, i.e. more than one half of total employment is likely to be affected.

Teleworking: not additional employment

One particularly interesting aspect of the change in information-related occupations is the increase in teleworking, which is much more feasible thanks to the new information technologies and the multimedia applications they support than in the past. A survey conducted by *empirica* in 1994 of the five largest EU countries forecast a potential of 8.7 million jobs for teleworking, 2.9 million of them in Germany, by the year 2000.[40] Extrapolating this figure, this would represent 10 million employees throughout the EU, compared with the current figure of 1.3 million teleworkers. While these are clearly "new" jobs in a qualitative sense, the majority of them are likely to be spatially relocated "old" activities and not a net increase in employment.

Quantitative Effects – Increase in the Overall Level of Employment

The process of structural change on the labour market, which is to be expected not only within the EU but in all industrialised countries, is associated with a number of problems. These form the subject of a Green Paper entitled "Living and Working in the Information Society. People First" published this year by the European Commission and include the greater need for life-long learning and the increase in the number of precarious employment relations lacking the protection of a written employment contract.[41] The Commission takes the view that these problems can, in principle, be solved; in particular it rejects any strategy that has the effect of slowing the pace of structural change. This view is based on the conviction that it is only if the new information and communication technologies spread rapidly throughout the economy that the overall macroeconomic impact on employment is positive.[42]

Recent studies on macroeconomic employment effects

To some extent the view that the new information and communication technologies will lead not only to sectoral but also to macroeconomic employment growth are based on an optimistic interpretation of the theory of long growth cycles (so-called Kondratieff cycles). On this view information technologies are comparable, in terms of their potential, with the steam engine, the railway or electricity, i.e. with other basic innovations that in the past have led to an extended investment and growth cycle. Information technologies are thought likely to have the same effect.[43] Yet the identification of a statistical coincidence between the diffusion of basic innovations and growth phases tells us little about cause and effect. The causal chain may run in both directions: innovations stimulate economic growth or rapid economic growth is conducive to structural change and thus accelerates the diffusion process of new technologies. The proponents of this optimistic view have so far failed to quantify the growth and employment effects that may be expected. Recently, however, a number of studies have attempted to quantify the macroeconomic employment effects of the new information and communications technologies.

40 Cf. Empirica GmbH, Telearbeit: Befragung von Entscheidungsträgern (DMS). Internationaler Vergleich. TELDET Bericht Nr. 4, Oktober 1994.
41 Highlevel Expert Group, Building the European Information Society for Us All – First Reflections, Interim Report, January 1996.
42 European Commission, Green Paper Living and Working in the Information Society: People First, COM (96) 389 final.
43 Cf. Nefiodow, L.A., Der fünfte Kondratieff: Strategien zum Strukturwandel in Wirtschaft und Gesellschaft. Frankfurt/Main und Wiesbaden 1990.

These studies are generally based on three causal chains:

- additional demand for new media and communications goods, which leads to the sectoral growth analysed above;
- indirect demand effects in the branches upstream of the media and communication sector, for example through investment by media and communication firms (so-called multiplier effects);
- and – the major effect – an improvement in competitiveness in large sections of the economy resulting from the productivity growth derived from the deployment of new multimedia goods and services.

Expectations of three studies

Of the studies of sectoral growth and employment effects of new information and communication technologies mentioned above, three state their expectations as to the macroeconomic employment effects.

- The study by the Japanese telecommunications council (1994): by the year 2010 a total of 2.4 million jobs could be created in Japan by means of a multimedia support programme, of which around one third would be in the (imprecisely defined) telecommunication sector.
- The ADL study for Germany (1996): although the accelerated introduction of media and communication goods and products from the TIME branches would not lead to an overall increase in employment in Germany, it would enable the decline in employment to be virtually halted from around the year 2000.
- The CEA study for the USA (1994): The study compares two scenarios. If a support programme for the National Information Infrastructure were implemented around 2.2 million additional jobs could be created by the year 2003, around 40% of which would arise in the telecommunication industry.

METIER study on Europe: two scenarios

One study which attempted to quantify the growth and employment effects of the new information and communication technologies at the macroeconomic level was that by the METIER consortium, conducted in 1995 on behalf of the European Commission. This study also compared two scenarios. In the EU as a whole 6 million more jobs could be expected, according to the results of the study, if the pace of technological diffusion is "rapid" than if it is "slow".[44]

This last-mentioned study sets out the assumptions and methodology on which the results are based most clearly. It is therefore particularly well suited to illustrate the causal chains on which the hypothesis "higher competitiveness through multimedia applications" is based.

- The "rapid diffusion scenario" assumes that as early as 2003 around 90% of all firms in the EU are able to utilise broadband telecommunication services with a transmission rate of 34 megabits/s. This means not only that the public telecommunication networks will have been modernised accordingly by this date, but also that firms have the required terminal appliances at their disposal. Moreover, in this scenario around 55% of all private households are able to utilise interactive multimedia services by the year 2010. The motor behind this

44 Cf. METIER Consortium (1995), The Impact of Advanced Communications in European Growth and Trade. Final Report. Study on Behalf of the European Commission. o.O. 1995.

development is seen as a sharp fall in the costs of communication in terms of both the hardware and transmission costs. Compared with 1995 levels the study assumes that the costs of communication will fall to just 10% for firms and to 30% for private households.

* The "slow diffusion scenario" differs from the former primarily in terms of the speed with which the costs of communication decline: down to a fifth of their 1995 level for firms by 2010 and to 45% for private households. The possible reasons given for such a development are, above all, the lack of a competitive framework for telecommunication suppliers and the resultant hesitancy to invest in consumer markets, the outcome of which is that the advantages of mass production are not exploited. Although the diffusion of the new information and communication technologies in the business sector is not seriously affected by this, only one third of private households make use of multimedia services in the year 2010 in the second scenario.

Premises for rapid diffusion scenario

The positive employment effects in the "rapid diffusion scenario" expected in the study are based on the following premises regarding the causal chains:

* The multimedia applications made possible by the new information and communications technologies increase the extent to which many services (e.g. all business-related services, information and communication services) can be traded internationally and are also conducive to the globalisation of many goods markets.
* This raises competitive pressure and thus the need to produce efficiently, particularly within the European Single Market. This means that the causal chain starts with a decline in employment.
* Yet on the other hand, these productivity gains improve the international competitive position of the EU as a whole and thus lead to a marked increase in EU exports in the medium to longer term.
* Export growth in turn leads to an increase in the long-term annual average rate of economic growth in the EU of 0.2 percentage points (from 2.4 to 2.6%), whereby this positive effect does not make itself felt until after the turn of the century. Annual employment growth in the EU then increases from an average of 0.8% to 1.0%.

EU unemployment result of growth in labour force

Although to the year 2010 this implies a difference of 6 million jobs between the two scenarios, even given the more positive trend, EU unemployment rates are only expected to decline marginally (Table 4.2).

These quantitative projects are based on estimates made by experts on the basis of extrapolations to sectoral or branch level of data from cost-benefit analyses for individual firms. The conclusions drawn are also analogous to the results obtained in the 1980s on the basis of the econometric studies conducted into the employment effects of new technologies as a whole within the framework of the so-called META Study in Germany.[45] These results showed that branches investing heavily in the new technologies could usually more than compensate for

45 Cf. DIW (Ed.), Sektorale und gesamtwirtschaftliche Beschäftigungswirkungen moderner Technologien. Berlin 1988.

"Employment growth will only come about if the rapid exploitation of the potential offered by the new information and communication technologies actually enables EU firms to gain additional market shares on world markets."

Table 4.2: Foreign Trade, Growth and Employment in the EU
Given Slow/Rapid Diffusion of Information Technologies

		1992	"Rapid diffusion scenario" 2010	"Slow diffusion scenario" 2010
Exports by the EU countries (ECU billions)		1166	2998	2748
of which:	to other EU countries	730	2143	1794
	to non-EU countries	436	1197	954
GDP of the EU countries (ECU billions)		5421	8612	8314
EU labour force (millions)		154	180	180
Employed (millions)		139	166	160
Unemployed (millions)		15	14	20

the productivity effects by generating additional export growth, and thus recorded a positive net employment effect. Those branches not investing heavily in the new technology, on the other hand, suffered a relative decline in employment. Thus the result of the METIER Study, i.e. that a rapid diffusion of multimedia applications will in the longer term exert more significant positive employment effects than slow diffusion, is not implausible, even if it is not based on a consistent econometric model.

Negative employment effects will inevitably occur in all the EU countries, positive ones depend on market success

Yet it is important in this context to underline one result of the study that so far has been largely neglected in the public debate, but one also generated by the ADL Study of 1996: the negative employment effects resulting from the rationalisation potential offered by the new information technologies will inevitably occur in all the EU countries, whereas there is no guarantee that employment growth as a result of improved competitiveness will automatically occur. Employment growth will only come about if the rapid exploitation of the potential offered by the new information and communication technologies actually enables EU firms to gain additional market shares on world markets.

However, given that, as we have already seen, all the leading industrialised countries are currently making efforts in the same direction, a relative improvement in the competitive position of each country cannot occur for all at once. The only hope that remains for the new technologies to generate rapid overall economic growth in the industrialised countries, sufficient to bring down unemployment in a lasting way, is that the core assumptions of the new growth theory apply, namely that knowledge is a factor of production in its own right, one with positive external effects, and that faster knowledge accumulation in the information society will have the effect of raising growth rates in all the industrialised countries. Controversy remains, however, on whether this premise receives empirical support from past developments.[46]

46 Erber, G./Hagemann, H.,op. cit.

Sources
Table 4.2: METIER-Consortium, 1995.

Résumé

The analyses and prognoses of the growth and employment effects of multimedia information and communication technologies presented in this contribution can be summarised as follows:

Basis of hope

* Hopes of higher employment and faster growth have been pinned on the EU's "Information Society" project. These hopes are based on the premise that it is only via a rapid diffusion of the new information and communication technologies and multimedia applications that positive employment effects in the EU will be generated, namely through the causal chain: globalisation of competition – productivity growth – improvement in competitive position – economic growth.
* The lowest common denominator of the market and growth prognoses published so far is that they tend to express an expectation of rising turnover and growth in the field of telecommunications and multimedia. In all other respects they do not permit comparison. They offer little by way of hard evidence, particularly for a differentiated evaluation of the pace of diffusion.

Constraints on demand

* On the basis of research into innovation diffusion, it is possible to identify a series of "constraint problems" on the demand for multimedia by the various demand segments (private households, firms, government). These constraint problems are mutually independent and their solution will take time. Constraints on rapid diffusion exist on both the supply and the demand side. The importance of the various constraints varies significantly between countries. Examples include endowment with appliances and connections, degree of acceptance, media and communication expenditure, supply of media and competition within the sector. Further research is required given the lack of consistent and comparable data on the European countries with which to determine both the initial situation and the constraints on the diffusion of acceptance and demand.

Slow diffusion in private households

* The diffusion scenario calculated for Germany, by way of a case study, for private household demand is largely to be seen as a trend prognosis. The central finding is that the growing purchasing power potential at the disposal of private households for media and communications goods and services is insufficient to permit a rapid diffusion of demand. Equally unlikely is a rapid restructuring of spending items in favour of multimedia goods and services in view of the slowness with which the "acceptance gap" is being bridged. On the basis of these model calculations the following rule of thumb can be given: until the year 2000 only around one third of private households will be able to take the road towards the information society. Even by the year 2010 almost one third of German households will remain outside the gates to the world of multimedia.

Business and government spending needed in start-up phase

* Particularly in the start-up phase of multimedia development, it is therefore vital that additional demand comes in the form of spending by private sector firms and public sector institutions on media and communication goods and

services. Although the volume of communication and media expenditure by firms is around double that by households, and a faster rate of growth is to be expected here, the model calculations on the extent to which the potential for substituting new forms of media for older forms will be exploited suggest that the pace of diffusion will be limited in this demand sector, too. This applies to an even greater extent to the government demand sector.

M&C sector cannot be considered a leading economic sector either in the EU or in the USA

- It is not permissible to draw direct conclusions on the increase in value-added and employment in the media and communication sector from the growth of turnover of media and communication goods. Any correct measurement of the macroeconomic importance of this sector must be based on the gross value-added of the media and communications (M&C) sector (i.e. the sectoral variable comparable to GDP) and on employment shares. Moreover, the growth forecasted refers to a statistical definition of the sector that includes areas likely to be gradually displaced by the new goods and services. In terms of the data on value added and employment currently available, the M&C sector cannot be considered a leading economic sector either in the EU or in the USA.

Results of model calculations

- Model calculations performed on the basis of the above demand prognoses suggest only average growth of value added in the media and communications sector to the years 2000 and 2010 compared with overall GDP. In terms of employment, too, the calculations point to an increase of just 5% (100,000) to the year 2000 and 10% (200,000) to the year 2010.

  These results are significantly lower than the optimistic expectations voiced until recently. The increase in value added and employment is expected to be above average in the following branches: audio-visual media, telecommunications services and data-processing software and services. Yet employment growth in these branches will be offset by the simultaneous decline expected in the print media and postal services. Moreover a "productivity revolution" is expected in the field of data processing. Overall the sectoral employment prospects are highly ambivalent.

Qualitative change for all the information-related occupations

- At the macroeconomic level the new information and communication technologies and multimedia applications mean that virtually all the information-related occupations – which account for a substantial and rising proportion of overall employment in all the European countries – are being subject to pressure for qualitative change. Yet, just as is the case with telework, these are in most cases not new jobs, but merely existing activities that are being changed in spatial and/or qualitative terms.
- The expectation that growth and employment effects will occur not only at the sectoral, but also at the macroeconomic level is based on an optimistic interpretation of the theory of long growth cycles. The central hypothesis is the conviction that only a rapid diffusion of the new media and communications technologies and multimedia applications will generate positive overall employment effects at the macroeconomic level.

This paper has brought together a number of arguments and model calculations that cast doubt on the applicability of such "simple" causal attributions.

A "paradox of optimism"

The study conducted by the METIER consortium in 1995 on behalf of the EU Commission comes to the conclusion that the positive growth and employment effects depend decisively on a rapid pace of diffusion with respect to private demand, and at the same time that the negative employment effects resulting from the potential for substitution and rationalisation are unavoidable. This can only be termed a "paradox of optimism".

Growth theory suggests that the probability of positive effects increases the faster additional market shares can be gained by exploiting the potential applications on global markets. Yet if, as is the case, all the industrialised countries are making efforts in the same direction, is it possible for all involved to experience a relative improvement?

A better strategy: overcoming the constraints on diffusion

One way out of this dilemma would be to seek, within international institutions, to create better conditions for a win-win situation for all competitors. It is difficult to determine the chances of such a strategy succeeding, however. More promising would appear to be all those approaches that seek a more professional mastery of the factors and strategies for successfully overcoming the constraints on diffusion.

The pace of diffusion is the result of a complex interlocking of cause-and-effect chains, including the framework of conditions, the conditions of development and supply-side strategies. Greater knowledge of these interrelationships, and its implementation in the form of operational concepts to accelerate the diffusion of demand are likely to be the decisive catalysts in enabling the hopes for economic and employment growth to be fulfilled.

Economics of New ICTs
K. Schrape / W. Seufert

Social Perspectives Summary

Interactivity in the Private Home

The "various rhetorics" and complacency of the multimedia industry try to blind decision-makers to the variety of options in heterogeneous environments in the private home and are intended to provoke rash investments by easy simplifications. Thus, the communication revolution in European private homes is moving at a slow speed. "The European household of the future will ... be, at best, mid-tech as opposed to high tech environments" (Silverstone). The interactive scenario in the private home seems to be hyped and TV will remain essentially non-interactive: "Just as the average consumer can not imagine what interactivity might be, he or she is just as likely to find difficulty ... with the principle that television might no longer be a screen that you just watch" (Silverstone).

However, Silverstone expects the TV to be at the very heart of the "screen machine". It "seems, on the face of things, a much more likely platform for interactive services than the PC" (Silverstone). Claisse argues that "the distribution of personal computers in European households is still well below the threshold above which we can consider that a technological innovation really transforms daily life". He is more than cautious in his predictions and expects no "radical technological change" through information technologies in the private home for the "next twenty years". No "ruptures" but slight trends will score the way, and they may even be in "perfect synergy" with actual life. Those trends, more or less unrelated to the type of technology in which they emerge, are nomadism and cocooning, entertainment and utilitarianism, distribution and interaction, communicational zap and social links and finally communication and decommunication. Technology in this perspective may be understood as a set of "convivial tools" to co-evolve communication and society.

Lange identifies eight strategic scenarios of the interactive home, but his scenarios, although a mixture of social and technological trends, are far more technology oriented: the increase in quality scenario, the selective TV-scenario, the CD-ROM scenario, the Internet scenario, the Web-TV scenario, the value-added services scenario, the home automation scenario and the virtual reality scenario. According to Lange those scenarios are as complementary as the trends suggested by Claisse, but the open competition among those strategies will yield an integrated approach to enhance the level of dedication in everyday life.

Emerging interactive new computer cultures should first be described not as being "digital" but as being "different". They are "wild" cultures, which cannot be understood from the logic of the old media, which even Silverstone, still referring to the importance of TV in everyday life, admits: "In terms of the model of domestication, the telephone and the television are entirely tame, and the video

recorder and the computer, in different degrees, are still quite wild. ... Television ... is unlikely in the short and medium term to be transformed into anything more than a neo-interactive machine, offering sophisticated choices but little in the way of significant two-way interaction or content invention" (Silverstone). The realm of security and withdrawal is challenged through the idea of "dedication" (Lange) which is close to the idea of making the "averaged" life not just more personal, but even wilder. The complexification and complication of life is related to the sensation of uncertainty. This is the basis for "the indeterminacy and uncertainty at the heart of consumer and media culture" (Silverstone).

The entertainment business is neither an easy selling business anymore nor does it remain the market for low-involvement passivity. But the desire to enhance the level of activity may exceed the need to relax. Distraction and relaxation are not the only feelings sought in the private home. "As much as people get frustrated and bored from 'reality' outside of their home they demand more dedicated experiences in their personal and private life" (Lange). There could be a market for new types of dedicated activities, already emerging as "chat-groups" and "multi-user-dungeons". With low usage among the whole population and a limited range of new services they do not characterise the actual interactive business, but they may indicate the long-term trends.

"The entertainment industry acts as if people unanimously expect only distraction at home, but here will be a new market for edutainment, gaming and leisure work which is not at all developed yet" (Lange). Mobility in this respect is the open exchange of localities, which are restricted neither to work nor to leisure activities. De Sola Pool's "double life of technology", the simultaneity of connection and separation that the telephone enabled, "can be extended to that of mobility and stasis (as the use of the mobile enables both freedom of movement as well as the ability to stay in one place while communicating with someone on the move)" (Silverstone).

"Domesticity" is a "socio-technical dimension of the informatisation of everyday life which focuses on the specific social and cultural space of the household" (Silverstone). The introduction of new types of interactivity in the private home is a way of taking advantage of new expectations and interfering with the balancing power of value systems. The industry which intends to shape new services has to consider that the consumer's choice may be limited by his capacity to cope with the change (Silverstone).

New communication technologies may contribute to a new sort of "moral economy", the laws of the business machine may not be applicable to the realm of the private. This could be the reason why many people mistrust new technological trials in a competitive market although the technologies offered may be of some use to them. People are scared and rather sceptical when interpersonal relationships start to be measured in money and even smaller micropayments do not ease the tension (Lange). And what is affordable may not be satisfying or convenient.

Roger Silverstone

New Media in European Households

"The supposed insatiable demand for information in the household of Europe is a chimera, except for for the household of the professional classes, some of whom will be working from home and, ironically, also for the household of the socially disadvantaged – the unemployed ..., the lone parent ..., the physically disabled – whose dependence on an increasingly electronically mediated public information system for social survival, and their lack of mobility, suggest that domestic access is likely to be crucial."

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You stay at home and send your eyes and ears abroad for you. Wherever the electric connection is carried – and there need be no human habitation how ever remote from social centres, be it the mid-air balloon or mid-ocean float of the weather watchman, or the ice-crushed hut of the polar observer, where it may not reach – it is possible in slippers and in dressing gown for the dweller to take his choice of the public entertainment given that day in every city of the earth.

(Edward Bellamy, Equality, 1897)

Early in the next millenium your right and left cuff-links or earrings may communicate with each other by low-orbiting satellites and have more computer power than your present PC. Your telephone won't ring indiscriminately; it will receive, sort, and perhaps respond to your incoming calls like a well-trained English butler. Mass media will be redefined by systems for transmitting and receiving personalised information and entertainment. Schools will change to become more like museums and playgrounds for children to assemble ideas and socialise with each other all over the world. The digital planet will look and feel like the head of a pin.

(Negroponte, Being Digital, 1995, 6)

... the prediction of future events is more difficult today than it ever was in the relatively static, custom bound society of the past ... The wonder is not that older systems of divination should have lasted so long, but that we should now feel it possible to do without them. The investment programmes of modern industrial firms, for example, require decisions to be taken about future policies at times when it is often impossible to form a rational view of their outcome. It is not surprising that industrialists sometimes use barely relevant statistical projections in order to justify what is essentially a leap in the dark.

(Thomas, Religion and the Decline of Magic, 1971, 791)

When it comes to the future, technologies are easy, markets are harder and societies hardest of all.

Differences between neat predictions of social change and the realities of our everyday lives

At a recent conference on the future of interactive television a group of around fifty academics and individuals working at the cutting edge of interactive television development were asked by a speaker about to present the latest Internet use figures in North America how many had connected to the World Wide Web the previous week. All but two had done so. He then asked how many of those who had accessed the Web believed that it would have a significant influence on their lives. No more than six hands were raised. How to understand this discrepancy? The Conference had heard from speaker after speaker that we were in the middle of a revolution so profound and so intense in its consequences that life would never be the same again. Yet here were those very same people reflecting on their own experience in quite different terms. Maybe revolutions only happen to others. But maybe, too, that when it comes to experience, that is to the realities of our everyday lives with our media machines and services, that we have to confront a more complex, dare I say a more interesting, set of circumstances, and a situ-

"The screen machine – a single audio-visual terminal through which digital communications and information will enter and leave the household – is clearly technologically possible."

ation in which the meanings and significance of technologies both intrude into, and disturb, the neat predictions and simple formulations of the technologically defined analysis of social change.

Two levels of complexity concerning social and technological change

To grant this first level of complexity, a level of complexity unlikely to disturb sociologists, but one which engineers and technological soothsayers seem still to find quite shocking, is to begin an enquiry which should have consequences not just for the way in which we think about social change, but even more significantly, it should have consequences for the way in which we think about technological change both in general and in the specific context of the new media.

In this paper I want to explore some of these issues with a view to offering an analysis of the social life of media technology, especially in the home, which might lead to differently informed as well as possibly different conclusions about the future than those that the revolutionary theorists are currently providing.

The Past, the Present and the Future

Technological innovation is a dynamic process which involves the emergence of a social and cultural reality which can very rarely be foreseen. The telegraph and the telephone did not emerge fully fledged as socio-technical systems (Marvin, 1988), any more than did radio (Williams, 1974), and their position in, and influence on, the household with respect to consumption and use was a matter, at best, of evolutionary development as individuals and families, stutteringly and unevenly, came to terms with a new information or communication technology, and in so doing added their influence to those of engineers, designers, market-makers and regulators participating in the public and private definition of the new machine or service. The path from telegraph to digital satellite may look straight and upward as we turn to look in the rear view mirror, but that path has been littered both with a succession of failed technologies as well as intermittent moral panics, as innovations have struggled to find their technological and social places. So while one quite plausible technological vision of the future, what I want to call the *screen machine* – a single audio-visual terminal through which digital communications and information will enter and leave the household – is clearly technologically possible, its acceptance and perhaps above all the form or forms of its acceptance, is far from clear. And its consequences for how we might conduct our everyday lives is murkiest of all.

The screen machine: a single audio-visual terminal through which digital communication and information will enter and leave the household

Turning to look back has, therefore, its uses. The post-ENIAC world has been one of exponential advance in computing power which has enabled information processing to be conducted at ever increasing speeds and in smaller and smaller machines. Speed and miniaturisation, as well as the capacity to deal with complexity, are familiar dimensions of the digital revolution. Less obvious, but just as significant, is the way in which such technologies, together with television as heir to radio as a broadcast medium, have advanced the centrality of the visual

The double-edged character of technologies

in twentieth century culture as much as they have enabled individual control. Visibility and control are entirely inter-related. They are also, like the technologies that enable them, double-edged. To see is also to be seeable. To control is also to be controllable. To reach is also to be reachable. Our desire for the first has conventionally outweighed our fear of the second in technological culture but our recognition of both has led, and will continue to lead, to occasionally crippling ambivalence about the social dimensions of innovation. It is similar at home, where social change and technological change run at different speeds with planned and unplanned technological obsolescence on the one hand and the life-cycle and generational change on the other. Indeed acceptance of the technologically new is a function of the availability of cultural resources and competences, as much as it is of the availability of the technology or service, or the available financial resources to buy it.

To approach the media and information culture of the European household is to approach, therefore, a complex and constantly changing social and cultural space, both in the private world of media consumption and in the relationship between the private and the public, as the boundaries between home and work, and between the personal and social, blur or become increasingly permeable. To say that both old and new media and information and communication technologies are centrally involved in this process is to say nothing new. To point to our increasing dependence on such technologies and services, for our entertainment, for our communication with each other, and for our capacity to be informed about the world around us, is also entirely uncontentious.

Social Difference and Inequality

Inequalities in media technology ownership and use in Europe

But at the same time it is important to insist on social and cultural differences and inequalities: to point out that telephone ownership is still skewed with respect to social class, especially in the UK, Spain and the former East Germany where ownership for those with income below £11,000 sterling falls below 85% and falls even further to below 75% in the case of the unskilled manual worker in the UK(Henley centre and Research International, July 1996; *Social Trends*, 1994); that television use is differentiated with respect to national culture, ranging from an average viewing time of under 150 minutes per day in Austria, Denmark, Finland, Netherlands and Sweden to over 250 in Italy, Portugal and, of course, the United States (1993/4 Figures, *Screen Digest*, February 1995), as well as with respect to gender and age; and that access to, and competence with, computers is also a function of the availability of material and symbolic resources (1993 US census figures show profound inequalities of PC ownership with respect to both class and ethnicity; and recent comparative figures in Europe, though based on a sample biased towards city dwellers and therefore likely to skew values upwards, shows that over 50% of households with incomes over £22.000 claim ownership of a computer, whereas the percentage falls to 20% or under in among low income (below £11,000) households (Research International and the Henley Centre, July

1996)). These tensions and differences should, and do, affect and unsettle market forecasts as much as policy making. They will also affect the pace, the quality and the consequences of technological change.

This is the context in which the pursuit of an analysis of the future of new media in the households of Europe will be undertaken. The analysis will take the following form. It will centre on discussion of what will be identified as a sequence of separate but interrelated *socio-technical* dimensions of the supposed communication and information revolution. These socio-technical dimensions point to the hybrid nature of such change. Their identification and analysis will involve the recognition both that technological change has to be considered as social, as has already been argued, but also that social change both within and beyond the household has increasingly now to be considered as technological. The paper will conclude with an identification of possible household technological futures.

Social change has now to be considered as technological

The four socio-technical dimensions of media and information change that need to be identified are as follows:

* Interactivity
* Mobility
* Domesticity
* Community

Interactivity

Interactivity is often seen as a quality of technology. Indeed it is increasingly seen as the key distinguishing characteristic of the new range of technologies that are about to take over media space. Both the CD-ROM and the Internet are supposed to be sites of this new interactivity. So too, though it has been much more trumpeted than realised, are the opportunities for local interactivity that switching technology within cable and telecommunication systems are said to make possible. For Rafaeli (1988; Newhagen and Rafaeli, 1996) full interactivity only takes place when the content of a communication is itself dependent on a previous communication, thus indicating the essentially iterative nature of the interactive process.

Reciprocity determines interactivity: as communication on previous communication

However this purist, technological, definition of interactivity is not the only one to be mobilised in the various rhetorics surrounding the new media. Interactivity is also defined by the capacity of the user to intervene in the communication process, and in this context it is used in a way which presupposes the user's intervention in an ongoing text or database without the obvious reciprocity of the human. Interactivity can also signify technologically mediated two-way communication. Brenda Laurel (1993) uses the metaphor of the conversation to indicate the possibility of real-time, transparent electronic communication between participants. Sender and receiver roles are interchangeable.

"Not for the first time interactive technologies are machines and systems looking for uses."

Today's forms of interactivity are only modest

Indeed what interactivity is, or might be, is not just a matter of definition, or even of technical possibility, but of how that possibility is realised in the identification of potential user needs and in the creation of markets, but perhaps above all in actual use. Indeed it is possible to suggest that the present and predicted dominant operationalisation of interactivity is very much at a rather more modest end of things, for example in teletext or Video-on-Demand. Even the powerful voices behind the World Wide Web and Internet, for whom interactivity is once again a key marketing concept, have replaced any real notions of communicative mutuality by the one-to-many-to-one response of the consumer, buying, subscribing to, or just consulting information sources that increasingly are being packaged and sold (though the original rhetoric of relationships often remains). Promises, for example, of an intelligent user interface, as for example in the *Daily Me* newspaper that electronically pre-selects items expected to be of interest by the subscriber for daily down loading and printing, have yet to appear and of course have yet to be seen, apart from in certain business contexts, as being much in demand (Technology Foresight, 14, 1995).

Levels of interactivity as an approximation to more intimacy as well as control

This situation has led at least two commentators (Miles and Thomas, 1995) to see interactivity as a continuum in which "the flow of information is to *some extent* under the control of the user" (my italics), distinguishing between minimal interactivity (the public address system), moderate interactivity (teletext), high interactivity (online databases, electronic publications, hypertexts or hypermedia) and higher levels of interactivity (decision support systems). The higher the level the more electronic communication approximates to interpersonal communication, and the greater the resulting intimacy and control. The appeal of these higher systems is seen to be obvious to those who are developing and promoting them: to enable the user-communicator maximum freedom both to express him or herself within the infrastructure as well as maximum interaction with those who are chosen to participate.

What issues are raised by this characterisation and vision and how might those issues feed back into a consideration of the ways in which interactivity might emerge in practice?

Need

The first issue relates to the concept of need. Not for the first time interactive technologies are machines and systems looking for uses. The phenomenal growth of the Internet, estimated at round 50% annually at the present time (Carr, 1996) which can be argued in part as being not only a major interactive technology on its own account but capable of educating users into a more interactive culture sufficient to enable them to welcome the new TV based technologies when they arrive, perhaps belies this observation (Carr, 1996). Yet for the most part, even in North America where Internet use is at its highest (70-75% of Internet users are in the US (Carr, 1996)) it is possible to see that the bulk of users are still within the upper socio-demographic categories and that their use is increasingly being

driven by the neo-interactivity of the Web rather than by participation in arguably genuinely interactive multi-user sites and bulletin boards.

Ask any European consumer and PC user if they want interactivity from their television, and the answer is likely to be at best inconclusive (Silverstone and Haddon, 1996). A recent survey of UK households asked how respondents would spend £500, allowing the choice of only one item. 30% opted for a holiday abroad, 18% for redecorating, 14% for new furniture, and only 1% for cable TV (with or without interactivity) (Henley Centre, Media Futures, 1994/5). This can be compared to a recent RSL survey for the UK Government's Technology Foresight Initiative which revealed substantial disinterest across social classes in new technologies and services. Respondents were asked which of a full list of new hardware items (PCs, CD-ROM Player, Lap-top, Modem, Internet Link, Mobile Phone, Personal organiser, Wide-screen TV, Satellite/Cable link) they were expecting to purchase in 1995. Over 74% across all classes said they had no intention of buying any of them (Technology Foresight, 14, 1995).

Substantial disinterest in new media technologies and services

Dynamics

The second issue relates to the dynamics of interactivity itself. What does and might it mean in practice, and how might that change depending on the platform upon which it was being introduced? Though very little published research has been undertaken on the Internet user and on the meanings of such use, it seems reasonable to conjecture that much of the appeal (apart from the lack of cost for most institutionally based users) is the freedom both to connect and to hide in electronic space. To be able to do so effectively of course requires a number of prior conditions: access to the appropriate hardware and software; financial resources (as required); technical competence or literacy as well as desire. There is of course no doubt that the interactivity of the net is being driven, indeed created, in use, even if its idealisation in the anarchic communication of a wired society is progressively being eroded or marginalised by the forces of capital. Yet recent figures of ownership of PCs in Europe (currently at around 17% of households) suggest that by the year 2000 that figure will rise to 40%, of whom only a small proportion – less than 5% overall – will have a modem and Internet connection (EC/ACTS 1996).

By the year 2000 still less than 5% of all Europeans will own a PC with Internet access

Ownership

On the other hand television ownership across Europe is close to saturation and broadband cable will be passing a high proportion of European homes (EC/ACTS 1996 projected figures for 1998: 31% in France; 34% in the UK; 45% in Italy and Spain; 82% in Germany). Television seems, on the face of things, a much more likely platform for interactive services than the PC, especially given the capacity of cable to deliver digitally compressed video, voice and data into the home. Video-on-demand trials are currently underway in a number of EU member states (Belgium, France, Germany, Italy, the Netherlands, Norway, Spain,

TV seems to be a more likely platform for interactive services than the PC

Sweden, Switzerland and the UK) yet its future as a commercial proposition is still far from certain given the costs of the infrastructure. But just as significantly it is possible to point to a number of cultural barriers which seem to suggest that television is likely to face its own difficulties as an interactive medium. The first is cost and the need to educate viewers, particularly in some European countries, to accept that television is something that will have to be paid for (ACTS/FAIR, 1995).

Perception

But television is perceived as a non-interactive medium, thus demanding an evolution in consumer perceptions

Perhaps more significant, however, is the perception of television, as well as its use, as essentially a *non*-interactive medium (Silverstone and Haddon, 1996). Without suggesting that television is in any sociological sense passive, even in its present guise, it is certain that the redefinition of its role in the household from an essentially broadcast one-to-many medium, to something that requires active involvement by the viewer at whatever level is likely to be a significant and at best an evolutionary undertaking. Just as the average consumer can not imagine what interactivity might be, he or she is just as likely to find difficulty both with anything beyond the simplest interface but perhaps even more with the principle that television might no longer be a screen that you just *watch*.

On the other hand an ethnography of a recent trial of local interactive television conducted in Chicago (Carey, 1996) found a high degree of user satisfaction, citing a number of capabilities provided by interactive television that were valued highly. These involved greater choice of programming and greater control over it, the capacity to engage in limited transactions (including home shopping), the individualisation of content, the opportunities to play, both on screen and around it, and the capacity to communicate directly with the broadcaster. While this study seems entirely encouraging it should be pointed out that the subjects of the trial were all employees of the testing organisation, that they were all within a narrow socio-demographic group (lower middle class/upper working class in European terms) and that they were engaged in the local television culture in a way, and at a level, that arguably would be difficult to replicate in much of Europe.

While PCs provide global network services, television might remain a local interactive platform

At issue, in general, is the cultural definition of new media. Interactivity can be related and applied in both local and global contexts, and there is a difference here which may well have some bearing on the technologies that are used to support it. Whereas global interactivity is provided currently by a PC based global network, and even though television could indeed be linked via cable access to the same network, it is likely that television will remain tied as an interactive platform to the local – national or regional level – for this will require less in terms of its redefinition and enable more in the integrated provision of entertainment as well as domestic services, especially on a mass basis. The costs of such provision in Europe remain problematic as indeed does the strength of local, community, identification which the Chicago interactive trial, for example, both presupposed and mobilised. Nevertheless in a future interactive environment it can be perfectly

well argued that there will be room for multiple providers and different platforms, especially if distinct roles and functions can be identified for each.

Mobility

There is nothing terribly new in the availability of portable technologies, technologies that are in themselves, mobile. The Kodak Brownie camera was a user-friendly consumer product that enabled ordinary people to be released from the tyranny of the tripod and the photographic plate. Post-war transistors released radio from the socket and enabled the first occupation of public space by electronically mediated sounds, voices, and above all music. The Sony Walkman involved increasing personalisation and individual control and, sound leakage notwithstanding, did not significantly increase public disturbance. The next generation of video cameras and pocket video receivers have, with differing degrees of success, extended that portability into the realm of the audio-visual.

But mobility has other dimensions. And these are both material and symbolic. As Raymond Williams (1974) has famously noted, the availability of broadcast technologies as well as cheaper and more accessible forms of public transport between the wars enabled what he called "mobile privatisation". This involved the movement of populations into suburbs where they could find individual and familial privacy and a space to express their own personality, while at the same time feel supported both by a public broadcasting system which integrated them into a national culture and by a physical infrastructure which enabled them easily to get to work or to participate in leisure activities outside the home.

Mobile privatisation: Moving into the suburbs but still feeling connected and integrated through media and physical infrastructure

Both technologies and people were on the move, but in the case of media technologies it was not just physical movement which was involved. What they enabled was, on the contrary, the mobility of sounds and then images which encouraged suburban folk increasingly to stay at home. This arguably contrary social trend towards a kind of sedentary privatisation is one that has been much noted. It has involved a progressive strengthening, for most people, of the boundary between private and public space, private and public territory and an increasing valuation of the former at the expense of the latter. While recent figures seem to suggest that Europeans still spend considerable and relatively inelastic amounts of leisure time outside the home (*Eurostat '95*, 1995; Punie, 1995), replacing cinema going with eating in restaurants or taking holidays, it is nevertheless the case that it is the home which is still the more or less secure focal point of everyday life and whose security indeed enables us, as a consequence, to be mobile.

The mobility of sounds and images encourages people to stay at home

Mobility then can be seen to be an increasingly wide ranging notion. It can involve movement in time as well as in space. It can involve the movement of images and information as well as people. It suggests and enables flexibility, the flexibility and freedom to organise where we work and where we play both inside

Information technologies seem to offer liberation from imposed time regulations and space restrictions

the home and outside it. That freedom, for those who can afford it and on whom it is not imposed, is much valued. And for those who can and do choose it, it signals another dimension by which they can claim increasing control of, and flexibility within, their social and physical environment. This desire to be released from the tyranny, above all, of fixed geographical space as well as, arguably, industrial time, provides the social encouragement and support for media and information technologies that appear to offer such release, as well as being in turn reinforced by their emergence.

Characteristics of mobility

Mobility in all the above senses is socio-technical. It involves the mutuality of technical innovation and social change. It involves increasing individuation of media and information technologies as they become smaller, lighter and, above all in the case of the mobile phone, as they become integrated into yet another communication network which enables their users always to feel connected. And it involves increasing expectations of their capacity to control their own media and telecommunication spaces.

Mobile Telephony

Recent research (KPN, 1996) on the diffusion of the mobile phone across Europe points to a number of factors that seem to account for the variations in rates of adoption in different countries. These include the state of the fixed phone network, so that where the infrastructure is weak and (or) where there are waiting lists for access one can see a kind of leapfrog into mobile telephony. This is likely to be the case not just in the less developed countries of an expanding European Union but also in regions within the older countries of the Union where fixed telephony has been difficult to establish (for example in mountainous or underpopulated regions). Otherwise the introduction of GSM telephony seems to have boosted recent demand. Beyond these relatively clear cut findings the research moves into more murky waters, where correlations between take-up and income and pricing become less clear and this lack of clarity extends even further once one focuses on possible cultural factors. This is understandable because mobile telephony is rapidly changing and research that measures diffusion on a macro-sociological level can hardly expect to get to grips with the more subtle distinctions of status and patterns of use which would provide a finer grain to the analysis. Nevertheless it is clear that there are substantial variations in the current use of mobile telephones across Europe with the highest number of subscribers currently in Finland (118 per 1000) and in the other Scandinavian countries (including Denmark, (97 per 1000) and Norway and Sweden (87 and 89 per 1000 respectively), falling to under 40 per 1000 in the UK, Austria and Germany, and under 20 per 1000 in France, Belgium, the Netherlands and Spain.

One finding of significance, however, is that mobile telephony still seems to be, in the main, a business tool – which is not say that business use does not from time to time become personal (Wood, 1993). And it is clearly the possibility of the adoption of mobile telephony for personal and individual use which is of central

"Domesticity is a socio-technical dimension of the informatisation of everyday life."

concern here. The recent history of the marketing of mobile telephony involves the targeting of different consumers, and in the UK at least a campaign that has involved a progressive move away from the business to the personal consumer. It has not been without its hiccups, especially when it seemed to be encouraging a perception of gendered vulnerability in a campaign that stressed the usefulness of the mobile to women who were stranded or in danger in public spaces. Yet anecdotal evidence suggests that in these early phases of diffusion (and we are still in the early phases of diffusion) while the mobile has been adopted as a status object as well as a functional necessity by different and widely varying social groups (teenagers, ethnic minorities, criminal fraternities) it has yet to be regarded as an essential component of everyday life by a wider population even in those countries where subscriptions and ownership are at their highest.

Mobile telephony is not widely regarded as an essential component of everyday life

What implications does this analysis have for an understanding of the future life of mobile telephony? Ithiel de Sola Pool (1977) has noted how telephony, above all, exhibited a key and contradictory feature of all information technologies. He called it the double life of technology and he was referring to the simultaneity of connection and separation that the telephone enabled. The tension between the two can be extended to that of mobility and stasis (as the use of the mobile enables both freedom of movement as well as the ability to stay in one place while communicating with someone on the move). But it also involves another already familiar tension, that between control and being controlled and also that between reaching and being reached. We have developed a secondary technology, the answerphone, and a range of services to help us manage the intrusiveness of the fixed telephone. Indeed the experience of fixed telephony, arguably, is enough to sensitise many possible subscribers to the double life of mobile telephony, and especially to the intrusiveness of being called in impossible places. One can note, too, that the first question usually asked when calling to a mobile phone is "Where are you", indicating perhaps both a sensitivity to location but also a need to know where that location is so that one can adjust expectations and conversation accordingly.

Secondary technologies to handle the intrusive character of communication

If we are to make some sense of mobile telephony's domestic future – for in individual use the technology involves an extension of the household into public space as well as an intrusion of public space into the household – then we will need to take its contrary significance into account, and we will also need to take into account the need to develop social rules for public telephony, social rules that will be both culturally specific, adjusting as they must to different perceptions of what is and what is not appropriate behaviour in public places across the different States of Europe.

Domesticity

Domesticity is a socio-technical dimension of the informatisation of everyday life which focuses on the specific social and cultural space of the household. In

that space both new and old technologies gain their specific meanings and significance as individuals within the household negotiate their own relationships to them.

The Moral Economy

The household as a "moral economy"

It is useful to approach the more or less distinctive characteristics of the household by describing it as a moral economy. This follows E.P. Thompson (1971) in his description of the distinct economic culture of pre-industrial rural society confronted by the encroaching capitalist market. It also follows numerous anthropologists who have argued for a view of the domestic as a distinct social and cultural space in which the evaluation of individuals, objects and processes which form the currency of public life is transformed or transcended once the move is made into private space (especially, Parry and Bloch, 1989). In our private households, depending on available material and symbolic resources, we are more or less free to define our own relationships to each other as well as to the objects and meanings that cross our threshold.

Products of the cultural industry are being tamed in the household

Households can therefore be seen as both economic and cultural units within which household members can and do define for themselves a private, personal and a distinctive way of life. The materials and resources they have at their disposal come both from within – the inner world of family values – as well as being provided by the public world of commodified objects and meanings. The result is a dynamic transactional system in which households are actively and continuously engaged in a process of domestication, quite literally taming the otherwise and often alien or challenging products of the cultural industry, and making its mass produced objects and meanings their own (Miller, 1987).

Indeterminancy and uncertainty comes along with the usage of new objects, images and messages in the household

The acceptance and integration of, as well as the resistance to, new media or information technologies in the home is always therefore subject to the values the members of the household hold either collectively or on their own. And it is obvious that this integration is never entirely straightforward. When images, messages or objects cross the threshold of the household they become subject to values, practices that may be quite other than those that informed, or were intended in, their design or marketing. Herein lies the indeterminacy and uncertainty at the heart of consumer and media culture, an indeterminacy and uncertainty that bedevils all attempts at innovation, let alone prediction – both technical and social.

The particular characteristics of a household's moral economy will therefore define how both old and new media are actually used: how they are incorporated into the daily pattern and rituals of domestic life; how their use is structured by the gender and age based politics and relationships of the family at a particular stage in its life-cycle; how they are accommodated into a household's sense of its own domesticity, to its own sense of home. Equally the kind and level of resources a household can call on will also affect how old and new media come to be used,

"Ask any European consumer and PC user if they want interactivity from their television, and the answer is likely to be at best inconclusive."

both in terms of the household's spatial arrangements, in terms of its accepted patterns of, and conflicts over, time use, and in terms of such simple yet crucial factors as the number of screens, channels or information technologies available within the shared or shareable domestic space.

The moral economy of the household determines the usage of old and new media

A number of things follow from these observations. The first is that it is possible, at least in theory, to identify a media-technological culture as a key dimension of the moral economy of the household, a media-technological culture that is created by, and in turn defines, such things as who has principal access to the remote control, who is the first to answer the telephone when it rings, who has the right to a television or a video recorder in their private space, who claims economic or social control over the use of information and communication technologies over whom and how successfully, who makes the principle consumption decisions and how, and so on.

Household Difference

Households can be classified in their relationship to new media technologies by several indicators

It also suggests that households can be classified from the point of view of their relationship to new media technologies not just through the familiar socio-demographic categories of class, but through potentially more sensitive indicators, such as household composition (for example lone parent or individually occupied households), stage in the life-cycle (the elderly or the young no-child family), ethnicity, the presence or absence of homeworking (for example in teleworking households) or their participation in a shared public culture (for example in suburbia).

For example the number of one person households across Europe, in which both the young and the elderly live, has been growing consistently. It now averages 25%, with the fastest growth (23%) in Sweden, Norway, Denmark, Germany and the Netherlands where they now comprise over 30% of the total number of households (EC, 1996); the proportion of single parent families has now reached over 20% in Norway, Austria, Iceland, the United Kingdom, Denmark and Belgium, though these figures are much lower in the Southern States of Europe (EC, 1996); and the proportion of households where there is a teleworker, while extremely difficult to calculate is thought, at least in the UK, unlikely to be more than 4.6% of the total workforce (and the UK is generally believed to have one of the highest percentages of teleworkers, depending on how they are defined, in Europe) (Gillespie, Richardson and Cornford, 1995).

It also follows that an understanding of how households, and individuals within households, actually use their present media will give strong clues as to their likely acceptance and their patterns of use of future media and this will increasingly be the case as media and information markets move towards, and become increasingly dependent upon, software rather than hardware, programmes and services rather than machines (Europeans were already spending more on software than hardware by 1990 (with the exception of Greece, Luxembourg, Portugal and Spain (*Screen Digest* 1992)).

New technologies will have to take into account our experiences with the existent

New technologies and services, whatever their revolutionary claims, will therefore have to take into account how we experience existing technologies and services and the quality of those present experiences. New technologies and services can be embraced, accepted reluctantly, or resisted either specifically or generically (Miles and Thomas, 1995).

Indeed research (Haddon, 1995) has suggested, notwithstanding variations across class and culture, that most households tend to take the telephone very much for granted – it becomes an almost invisible technology in the home; they regard their own relationship to television as essentially a non-active one; the video recorder is still defeating (though there is usually one, often younger, member of the household who is depended upon for his or her skills in programming it); and the computer, when there is one, tends to be the property of one member of the family who may or may not be using it intensely but rarely to anything like its full capacity. In terms of the model of domestication, the telephone and the television are entirely tame, and the video recorder and the computer, in different degrees, are still quite wild. Familiarity breeds, and invisibility signals, dependence. Dependence in turn suggests that the relationship that we have to our technologies is deeply engrained and essentially conservative. The particular character of that conservatism is defined and sustained by the moral economy of the household in which we live (on these findings and discussions of them see; Silverstone, 1994a; 1994b; 1995; Haddon and Silverstone 1993; 1995; 1996).

In terms of domestication, telephone and TV are entirely tame, VCRs and PCs are still quite wild

Family Change

On the other hand nothing is static. Families change through their life cycle. Households break up and reform. Domestic cultures respond to changes in the environment and to the changing experience of work. Family structure and household composition are also changing. The overall population is ageing. Long-term, structural unemployment is becoming a persistent reality and the nature of work itself, for those who still have it, is changing too. Indeed life is becoming, for many, increasingly uncertain and vulnerable. The experience of technology is itself not static, and indeed it is obvious that the technological culture of today's households is unrecognisable when measured against that of, say, the 1960s. It can be argued that this tension between stability and change, between security and insecurity, is to a degree managed through media, communication and information technologies as well as being one consequence of their increasing significance in everyday life. The telephone conversation, the familiar structure of the broadcasting schedule, the capacity to watch one's favourite films or programmes whenever we wish, and as often as we wish, Internet access to global information on demand, all can be seen, in principle, to provide some security amidst the flux.

Media and communication technologies provide security in a constantly changing environment

So those new technologies and services that might be perceived to threaten or challenge the capacity to manage daily life in general and, more specifically, to

"The supposed insatiable demand for information in the households of Europe is a chimera."

manage our existing technological universe, are likely to be less acceptable than those that offer, incrementally or functionally, the possibility of both greater freedom or greater control, or the possibility of doing better something we already do comfortably well. Since the European home is still principally a place to withdraw from the world of work, for men and school children if not for women, and since there is still little evidence that there is substantive demand for it to be anything else, the rise in teleworking notwithstanding, then it can be seen why future developments in information and communication technologies and services in the home must be principally leisure based. The supposed insatiable demand for information in the households of Europe is a chimera, except for the households of the professional classes, some of whom will be working from home and, ironically, also for the households of the socially disadvantaged – the unemployed (Häußermann and Petrowsky;1989), the lone parent (Haddon and Silverstone, 1995), the physically disabled – whose dependence on an increasingly electronically mediated public information system for social survival, and their lack of mobility, suggest that domestic access is likely to be crucial. Otherwise the story must be that of the domestic pleasure dome, as satellite television distributors, games console and CD-ROM manufacturers as well as the tabloid press know very well.

Technologies are more likely to succeed if they offer more freedom or greater control in managing one's everyday life

Smart Homes

In the meantime there are other, albeit related, visions for the European home of the future. Primary amongst them is the *Smart House.* The *Smart House* has, relatively speaking, a long history, though this has been as much in the fantasies of futurists and industrial optimists as actually on the drawing boards or in implementation trials of industrial players (Coutras and Lacascade, 1996). The *Smart Home*, the *home of the future*, involves the materialisation of a constant dream – that our lives at home can be made more efficient and more comfortable, and that our homes themselves can both be infinitely manageable and globally interconnectable. Electronics, computing, telematics – and especially their convergence – are now seen as the key to a world in which the home, at the touch of a button, a click of a mouse, or the recognition of a voice, will create pleasure and safety, enable energy conservation and provide, instantly, automatically, a means to enhance the organisation of everyday life. This dream too is a basic and fundamental one, grounded as it is on a human desire for security and control in an increasingly perplexing and complex world. Yet once again there is a fundamental and so far crippling disjunction between consumer perceptions of their needs: to increase the efficiency of basic household tasks, to have an integrated electronic connection between the household and the outside world and the need for appropriate telematic and entertainment services and what the industry still suffering from the lack of technical standards and lack of equivalent vision has been able to provide (Meyer and Schulze, 1996).

Smart homes: the dream of efficient and comfortable, manageable and globally interconnectable private spaces

Acceptance of new technologies relies on inherent added value and the ability of consumers to realise it and to feel capable of handling it

In the coming media and information society the household will not be a neutral space. Each household has its history and each its distinctive culture. Willingness to accept new technologies and services will depend not just on the design or functional characteristics of what is on offer, but on the consumer's capacity both to recognise value and to feel capable and competent to accept it into the home. Once there, its meaning will change. It will or will not find its place. An understanding of the processes involved, their origins, their trajectory, their variation, is a *sine qua non* for the future management of the information society, and for the future of new media in the households of Europe.

Community

Ideas of community hover between experience and desire. Indeed in a developing Information Society the rhetoric of community has emerged as a key cultural and political motif. Both in the world of "real" social relations and relationships and in the virtual spaces of our media universe, as Kobena Mercer notes, when it comes to community, "Everyone would like to be in one, but no one is quite sure exactly what it is" (Mercer, 1996, 12). Underlying the use of the term is however a sense, as well as, often, an idealisation, of a set of shared or shareable values and experiences that enable communication and the sustaining of social relationships through time and, in one way or another, through space.

Community and domesticity, are socio-technical spaces: Both have to be taken into account for the future of new media in the households

I shall argue both that community must increasingly be seen, like domesticity, as socio-technical, and also that an understanding of community's socio-technical dynamics and contradictions is also an essential precondition for making sense of the future of new media in the households of Europe. This is because those households are embedded in a wider context of social and cultural relations, those relations are based both on face to face and on electronic (for example telephonically mediated) interaction, and the character and quality of those wider relations in turn feed back into, they both encourage or constrain, both decisions to purchase new technologies and services and the ways in which these new technologies and services will be used.

Broadcasting and Narrowcasting

The contribution which the mass media have traditionally made to the creation of community has been widely studied (Anderson, 1983; Scannell; 1989; Schlesinger, 1987). From the Sunday sermon to the regular television soap opera or news broadcast, the days, weeks and years have been punctuated by regular and predictable sequences of communications which have enabled those who have listened and watched to set a place for themselves in the world beyond their front door. Public service broadcasting has embodied this conjunction of time-space regularity and the particular claims for national community in most of the countries of Europe. The desire and capacity of individual households to structure their domestic schedules in accordance with these public ones is equally well

known – though it is important to note that the coincidence of daily temporalities, insofar as it does exist, depends to a significant degree on a mutual adjustment, in which broadcasters themselves have attempted to structure their own schedules and timetables according to what they believe are the dominant patterns of everyday life.

Narrow-casting: video rentals, CD-ROM purchases, multiple choices in digital TV

The security of this structure can no longer be guaranteed, which is not to say that it is still no longer desired. Narrow-casting in whatever form, through video-rental, CD-ROM purchase, or more especially through the multiple choices that cable and satellite television offer, has potentially profound consequences for any broadcasting sustained national community. UK households with access to satellite or cable watch on average 30% less terrestrial television than those without such access (*Screen Digest*, August 1996). But it also has consequences for the possible demand for those services that might be seen either to disrupt that security or just as easily be seen to disrupt the capacity of individuals effectively to manage an increasingly complex array of electronic offerings. It also has consequences, of course, for what researchers have identified as the secondary textuality of media and for the role of media as a kind of lubricant of social interaction in public spaces. Crudely put if we are all to watch different things at different times then how will the popular press be able to sustain their national discourse of television-based gossip, and equally significantly, what will we be able to share in conversations with our neighbours or our work mates? On the other hand it also has consequences, different consequences, for the capacity of the new media to create and sustain multiple "communities" amongst those sharing commonalities of ethnicity, sexuality or lifestyle.

The Real and the Virtual

Consequences of fragmentation and diversification

This is clearly an issue which is relevant to the take-up of new technologies and services, and the capacity of actual or potential consumers to manage, or believe they can manage, this increasingly fragmenting and expanding electronic environment. It has consequences, and obviously so, for the whole market system lying behind the provision of such technologies and services, who will have to come to terms with niche marketing in electronic space. It will also have consequences for any traditional notion of universal service. If we know that in an electronic universe of over 100 accessible broadcast channels (and still rapidly expanding) most viewers are highly unlikely ever to watch more than 7 or 8 of them (Bellamy and Walker, 1996), then the question arises as to how to make sure both that viewers can find the 7 or 8 that are personally the most fulfilling, and even more importantly for the industry, how to make sure that the suppliers find the most effective ways of providing them. One possible solution to this is clearly a set-top search engine, but even if the technology can be designed to be simple and user-friendly enough there is no guarantee that consumers will want to do anything that requires more than minimal interaction, or indeed to participate in an unsharable electronic culture.

Consequences of electronic sociability

But community intrudes into this complex in other consequential ways. The first involves the similarities or differences, as well as the compatibility or substitutability, between face-to-face and electronic interactions. Those who trumpet the idea of electronic community are expressing their enthusiasm for a new form of electronic sociability which extends not just to the existence of networks unconstrained by time and space – the heirs of McLuhan's global village – but to a belief that as a result of computer mediated interaction (CMC) new forms of social relations will emerge that will have profound consequences on all aspects of our lives, from the conduct of everyday life to the emergence of new forms of political action and representation. A number of points of direct relevance to the future of new media in the households of Europe can be made here.

Although dislocated, there are cultural bounds

The first is that such virtual communities, despite their non-dependence on space, their dislocation, are nevertheless still culture bound, both in terms of access and accessibility, especially with respect to gender, class, ethnicity or regional infrastructure, as well as in terms of the speed with which such new forms of communication are accepted. A recent study in Japan (Aoki, 1994) points to the continuing importance of face to face communication in Japanese society, the lack of free local calls and the negative image of "unsociable homebound people", as reasons for the slow take-up of CMC in that country. Many other studies, and many expressed anxieties, point to the dangers of an information rich and information poor society, in which communities will indeed form around new media, but like all communities both past and present in the process of including some they will inevitably be excluding others.

Capacity limits to extending our private networks into the electronic space?

The second follows, and it concerns the culturally specific limits to our willingness and capacity to extend the range of our home-based networks into electronic space or to embrace such networks as a substitute for the under-mediated interactions of everyday life. The growth of the Internet is evidence, or so it is sometimes believed, both of a high level of desire and indeed some achievement in this respect. Yet studies show that a substantial proportion of activity around multi-user sites is precisely that, activity around rather than participation in (Kawakami, 1993). And industrial experience has also shown how reluctant we appear to be to accept the electronic substitution for many (if not all) of our daily activities. While home banking seems to be increasingly accepted, the idea of home shopping and other examples of home based interaction have yet to emerge as serious possibilities. The balance that will be struck between the virtual and the real is therefore far from settled. It is likely neither to be consistent nor uniform, and it is also likely not to reproduce the supposed enthusiasm which early market studies of Internet use have shown, for example in the number of "hits" commercial WWW Pages have attracted. The World Wide Web may be about relationships but those relationships are neither likely to *replace* more conventional ones (except *in extremis*), nor are they likely to be other than increasingly commercial (c.f. Schrage, 1996).

"Forecasts are based on projections which take little or no account of social and cultural variation."

New Media and Community

New media have to take their place therefore in domestic environments which are already linked to (or are not linked to) communities. Such household participation in such communities is already dependant on media technologies and services. Both the telephone and the television have enabled them, above all, to connect to local or national cultures and, with varying degrees of intensity, commitment and consequence, to participate in different dimensions of community life. The degree to which households are already part of what they themselves might describe as community may well affect their desire to be involved in new media which offer an extension or a deepening of that involvement. It is far from clear, for example, how the possibilities for electronic democracy that various forms of interactivity are seen to enable are likely to be either a stimulus for, or even a consequence of, new media acquisition. Experiments in the US have not been replicated in Europe, and one needs to be cautious both in interpreting findings of such experiments as well as believing that European soil is as fertile as the North American seems to be.

The focus should be on the inclusions and exclusions of communities

It is therefore important to draw attention to the variety of experiences of, as well as desires for, community, to the process of inclusion and exclusion that they both depend on and enforce, and to the profound inequalities in social and cultural circumstance that are both condition and consequence of technical change. It follows that these differences will shape both the scale and the speed with which new media will be accepted into the households of Europe.

Talking About the Screen Machine

We are now in a better position to assess how the social might intrude into the process of technical change in the households of Europe, and what the consequences for future media and information technologies and services might be.

Different ways and different speeds of media technology diffusion

The first point to make is that confronted with a bewildering but increasingly sophisticated media technology environment, in which digitalisation is driving a whole range of increasingly interactive or neo-interactive services (video-on-demand, music-on-demand as well as home banking and Net based information services), households are going to enter the electronic spaces that these new media offer in many different ways and at different speeds. Forecasts of entertainmentled take-off in the consumer market between 1998 and 2000 but with major growth delayed until after the year 2000 (EC/ACTS 1996, summarising a range of recent predictions) which may themselves be either good or indifferent guides to the future are based on often under-reliable figures both of current penetration and diffusion rates. The forecasts are inevitably based on projections from early adoption patterns which themselves take little or no account of social and cultural variation both in purchase but more especially in use.

Conflicts between the variety of new offerings and the available usage time

The second point to make is that there is a tension in this process, seen macroscopically, between a rapidly expanding increase in the range of both hardware, the delivery systems, and in software, content provision, and a recognition that the amount of time available to consume will not, can not, increase substantially. Households with cable and satellite television do not significantly increase the amount of time in front of the television set, except perhaps in the short term, and indeed the average amount spent in front of the television, at least in a number of countries in Europe (Austria, Belgium, France, Greece), seems to have fallen since 1990 or remained more or less stationary (Germany, Spain, UK) (*Screen Digest*, February 1995). It is equally important to point out that new technologies rarely replace existing ones, unless they serve almost identical functions (the audio CD and the vinyl record for example). Radio has not disappeared from the home and may well be about to gain a new lease of life with the enhanced quality and flexibility that software radio will provide, having already been invigorated by the surge in local, niche and thematic radio. On the other hand the PC, and any network based services that it can deliver, has to be doubly articulated into the household: both as a technical object which requires the application of new skills, and as a medium which offers access to information, images, stories and interactions in entirely novel ways.

Factors for mass market acceptance

Forecasts of mass market penetration, therefore, disguise and distort the profound variations in the acceptance and use of new media technologies in the households of Europe. That those variations are region, class and culture based has already been argued, but the implications for many of the key services of such factors as household size and composition, the ageing of populations and what can be called "temporal capital" (the amount of disposable quality time that individuals can call upon and devote to electronically mediated pursuits) need also to be taken into account.

TV is unlikely to be transformed into anything more than a neo-interactive screen machine

Within these households, and in addition to the varying resources that can or can not be mobilised behind the acquisition of new media technologies and services, there are also the deeply engrained habits and perceptions which inevitably will constrain the capacity to change the role and function of existing technologies to be accounted for. This is especially the case for television, which is unlikely in the short and medium term to be transformed into anything more than a neo-interactive machine, offering sophisticated choices but little in the way of significant two way interaction or content intervention. The networked PC (with or without such tools as *Java*) on the other hand, both for reasons of cost and competence, will appear strongly in the households of professors and professionals, where skills and information needs are high, and also in households with children, more widely, where parental ambitions for an educational role will be subsumed by the increased seductions of on-line games. But issues of control loom here both with respect to cost of access (especially where the bill payer is not the machine player) and with respect to morality (concerns over access to unsuit-

able material or to unsuitable interactions, as well as anxieties around addiction). These may prove to be something of an inhibitor.

The European households will be at best mid-tech environments

The European households of the future will therefore be, at best, mid-tech as opposed to high-tech environments. Television will be more sophisticated than it is now, and computers will be, in the patterns of their use if not in their design, lower tech than they are now. The network PC will bring the cost of home personal computing right down but it will only survive if its interface is acceptably user friendly, if the right content and software is available for the niche markets (teenagers, professionals working from home) on which it will depend, and if the overall infrastructure can deliver the required information at an acceptable speed. Cable could well provide a convergent environment both for TV choice and PC interactivity and it is increasingly being, however optimistically, seen as the ideal platform for home education (van Rijn, 1996), but its capacity to do so will depend on such factors as overall cost of investing in the infrastructure, competition from satellite, as well as domestic acceptance of precisely what cable can so significantly offer: an integrated media environment centring on the single or multiplex screen machine. Indeed given the increasing individuation in households (Young, 1990), especially in households with adolescent children (and increasing numbers of post higher education returnees), the ability to offer distributed cable based services to a domestic multiplex must be crucial here.

A strong future for mobile telephony

On the other hand any new technology that enables control, access and accessibility and above all the management of time and stress are likely to be widely acceptable, and once again depending on cost, this is likely to mean a strong future for mobile telephony, especially with number portability. The telephone is after all the last technology to become individualised. The number of households in Europe with more than one telephone line is still small. The consequent changes to the quality of our public space will be inevitable and increasingly accepted but will require the development of a new kind of etiquette – "mobiliquette" – to parallel that already emerging on the Net.

Finally new strategies will also have to be adopted to create or enhance the provision, particularly, of electronic information and communication facilities in public spaces to enable those otherwise disadvantaged to gain access to systems on which increasingly their well-being will depend. But it is also crucial to ensure that new services depending on advanced delivery systems are not introduced without protecting existing services for those who neither have the desire nor the resources to keep pace with the speed of media change.

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Communication and Decommunication

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"This is the model of hypercommunication – communication as a value and as a tool for the management of everyday life. ... Most individuals who undergo the stress of hyper-communication need to disconnect, set up filters and barriers between themselves and their environment in order to become more selective, or simply to give themselves breathing space. ...This new communication hygiene, these strategies of decommunication or non-connection have usually been ignored by the prophets of the information society who are fascinated by the communicational abundance which they promise."

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Communication and Decommunication

Gérard Claisse

The government reports which have come out across the world on information superhighways or the information society announce a veritable scientific, technical, economic and social revolution concerning all the fields of daily life: work, education, health, security, dwellings, transport, leisure activities, culture...

"Development of the NII can help unleash an information revolution that will change forever the way people live, work and interact with each other"[1] the American Gore-Clinton report says. "This revolution adds new capacities to human intelligence and changes the way we work together and the way we live together (...) The information society has the potential to improve the quality of life of Europe's citizens, the efficiency of our social and economic organisation and to reinforce cohesion,"[2] the Bangemann report says. The globalisation process for economies would also appear to tally with a very consensual, even mimetic globalisation of the economic and social stakes for new technologies in information and communication.

The myth of a new society

All the elements are in place for the coming of a new society – a new age : the turn of the century, and the coming of a new millennium with an economic crisis lurking in the background. "The final goal of computopia is the rebirth of the theological synergism of man and the supreme being, or if one prefers it, the ultimate life force (...) It aims to build an earthly, not a heavenly synergetic society of god and man (...) Homo sapiens who stood at the dawn of the first material civilisation at the end of the last glacial age, is now standing at the threshold of the second, the information civilisation after ten thousand years."[3] Thus ends the report of Yoneji Masuda, Director of JACUDI, and 1971 author of the Japanese project entitled "The Plan for Information Society: A National Goal toward the Year 2000." Utopias are often stories of shipwreck (the Romanesque form of a crisis) on an island (the symbolic form of the civilisation which has to be reconstructed). The myth of the new society uses this same schema : the (industrial) society in full crisis will come to know a second Renaissance thanks to the sciences and technologies of communication.

Mythical discourse without history

The many and varied official discourses and reports which prophesy the effects of the information society on everyday life are perfectly typical of what we could refer to as mythical narratives. The mythical discourse is fundmentally a discourse which does not refer back much to history. What is new, and is given to it to interpret, is such a break with the past that history does not seem of any use in order to think about the future. The mythical discourse does not systematically evade criticism, for example, the risk of the loss of jobs linked to atomisation, or the risks of dehumanisation as a result of electronic communication, but always refers to the perverse effects as extreme cases, marginal deviations, and only accepts criticism in homeopathic doses. However, history tells us the relations between technical change and economic and social change are always ambivalent. The analyses of the influences of these new technologies on everyday life would gain from recognising this ambivalence, in order to think out tomorrow's communication – not in terms of a break, but rather in terms of the heavy trends leading to a diversification and increasing complexity of communication models.

1 Bill Clinton, Al Gore, National Information Infrastructure: Agenda for Action, 1993
2 Martin Bangemann, Europe and the global information society: Recommendations for the European Council, 1994
3 Yoneji Masuda, The Information Society as Post-Industrial Society, World Future Society, Bethesda, USA, 1981

"Major technological innovations in the field of information and communication technology are now behind us."

Some Main Trends

In recent history, two technological innovations have very considerably transformed the way people live and communicate: the television and the telephone. Television, first of all, has made its way into our daily lives to such an extent that it takes up more than half of Americans' free time (four hours a day on average). The telephone is present in nearly every home and has considerably changed the way people communicate, even if people do not really spend all that much time on the phone (around 12 minutes per day per person in France). Had we been dealing with professional life, the personal computer might well have been added into this review. However, the distribution of personal computers in European households is still well below the threshold above which we can consider that a technological innovation has really transformed the daily life of the majority of citizens.

The level of PC-ownership is below the threshold to transform the life of the majority of citizens

We can now look forward to the numerical convergence of these three technologies producing a revolution in daily life, as has been announced for the beginning of the coming century. Apart from the fact that the dynamics of economic and organisational convergence in these sectors of activity is somewhat problematic, I would like to defend the hypothesis that major technological innovations in the field of information and communication technology are now behind us, and that, through the domestic use of the telephone, the television and the PC, we shall discover the major areas in which new products and new services will develop. Only the technologies of virtual reality could lead to a radical technological change if they created a virtual telepresence in technical and economic conditions acceptable to all and sundry. But these conditions are unlikely to occur for the next twenty years. To put it another way, this hypothesis suggests a change in perspective and in outlook in order to think out tomorrow's communication in terms of today's principal trends rather than in terms of a complete break.

Virtual telepresence acceptable to all and sundry is unlikely to occur for the next twenty years

1. Among the principal trends, a certain number characterise the principal technological evolutions which are already under way. The first trend is the development of nomadic or portable technology; the portable telephone, the laptop computer, cellular transmission. This trend is in perfect synergy with a second trend which concerns the multi-equipment of households, especially as far as the telephone and television are concerned: personal terminals. The third trend is the generalisation of networks which ensure interactivity between the sender and the receiver; this interactivity can be partial or total. The fourth trend is the development of technologies and networks which enable the transmission of animated images of video quality. The final trend is the numerisation of networks and terminals which lead to hybridisation or which favour the convergence of audio-visual, computer and telecommunication streams.

Five principal technological evolutions

Five families of information and communication services

2. Other trends characterise information and communication services. Five major families of service exist and are developing constantly. There are the entertainment services which presently bring together traditional television and game consoles, and which are developing with cable or satellite television, and will be able to go on developing tomorrow with VoD, pay-per-view, and interactive games and programmes. Then come the interpersonal communication services, including the traditional telephone, which is of course the archetype, but to which mobile services are being added, along with E-mail, and which will no doubt see the arrival of the videophone, discussion forums etc. in the very near future. Next are the information services, such as the press, indicator services, consultation services, databases. We can go on to transaction services such as those offered by the banks, insurance companies, reservation agencies, teleshopping companies, etc. Training services will be able to develop within the framework of distance learning, or computer-assisted learning. Monitoring and supervision and assistance services such as telesecurity, telediagnostics, telemedicine, and teleregulation will also develop.

Major economic and social trends:

- globalisation and liberalisation
- merchandising of information and communication
- precarious employment
- process of individualisation
- disappearance of borders between public and private

3. Finally, we must take into account several major economic and social trends which have considerable influence on the development of technology, services and usage. The first trend is the globalisation of economies, which is fundamentally at work in the communication sector, for operators, producers, distributors and designers of technologies, services and information contents. The second trend is the liberalisation of economies which leads to ferocious competition among the various actors in communication, in prices, services, and innovation. The third trend results from the first two and is the merchandising of information and communication. The fourth trend results from the resistance to unemployment, or what can be referred to as the modern form of unemployment, i.e. the various forms of precarious employment; this generates new social fractures in many developed countries. The fifth trend is the continuation of the process of individualisation, which some refer to as the rise in individualism, and the development of communities which can change rapidly and which free themselves from traditional social groups. The final trend is the gradual disappearance of the borders between public space and private space, between professional life and private life.

All these trends, all these evaluations are going to bring about growing complexity (thus uncertainty) in the models of communication of everyday life. This complexity comes from hybridisation, telescoping, and the crossing of a certain number of highly distinctive models. Before presenting a certain number of these models which will enable us to think about tomorrow's communication, however, it is necessary to formulate some hypotheses about the future distribution and penetration of the new technologies of communication and information in daily life.

"Public authorities must pay considerable attention to the possible risks of the creation of a two-tier society."

From Solvency to Usefulness

European initiatives: the high-level expert group and the Bangemann Report

Following on from the Bangemann report, the European Commission appointed a high-level expert group to analyse the social aspects of the information society. The first comments of this group of experts were made public in January 1996 within the framework of a provisional report entitled "Building the European information society for us all."[4] This is a praiseworthy objective which echoes the following questions asked in the Bangemann report: "The main risk lies in the creation of a two-tier society, of have and have-nots, in which only a part of the population has access to the new technology, is comfortable using it and can fully enjoy its benefits (...) This places responsibilities on public authorities to establish safeguards and to ensure the cohesion of the new society. Fair access to the infrastructure will have to be guaranteed to all, as will the provision of universal service, the definition of which must evolve in line with the technology."

The objective: a virtuous supply and demand circle

The objective therefore is to create a virtuous supply and demand circle, while letting the virtuous mechanisms of the market play their role, in order to attain the critical mass from which the technologies and services of the information society can be distributed throughout the whole society. In this perspective, government bodies and public authorities must pay considerable attention to the possible risks of the creation of a two-tier society. Whence the importance of a debate on the evolution of the idea of universal service. The idea of universal service is all the more important as it is at the very heart of public policy for the distribution of the telephone and television. It is very tempting to think that history will repeat itself in the next twenty years and that the laws of the market, modified by an enlarged definition of universal service, will be in a position to build an information society for everyone. Such a hypothesis may either be naïve or deceitful.

The risk: a two-tier society

At the present moment, what is the actual spread of information and communication technologies in European households? Almost all of them have radio, television and the telephone; more than half of them have several receivers. For three quarters of households, the videocassette recorder has become an indispensable complement to the TV set. For other types of equipment, the rate is much lower, and varies a great deal from one European Union country to another. The penetration rates of the answering machine and the personal computer are approximately the same – between one fifth and one third of all households are equipped with them. The satellite and cable television equipment level is very variable : it is common in Germany, for example, and much less so in France. The number of subscribers to new state-of-the-art telephone services such as caller identification and multiplex conversations is very low. The cellular phone has not gained much ground in France and Germany compared with a PC with a modem (the Internet is still in its birth-throes in Europe).

4 Building the European Information Society for us all: first reflexions, High Level Group of Experts on social and societal aspects of the information society, European Commission, January 1996.

Threshold effects and inflection points

These new markets are obviously in full growth. If present trends continue, it would indeed appear that the arrival of these new technologies in households is for tomorrow. We often fail to point out that these trends come from the aggregate markets of both professional and household demand. We also often forget to underline the fact that the cycle for the distribution of an innovation is not linear, and that there are threshold effects and inflection points. The technological accessibility, the cultural accessibility, the solvency of households and the satisfaction which they get from using these technologies and services will, to a considerable extent, determine the threshold effects.

One third of the French population has never had the opportunity to use a computer

1. Cultural accessibility poses the question of competencies, apprenticeship, the capacity of individuals to navigate through the services offered to them. For example, it is very important to note that more than one third of the French adult population has never had the opportunity to use a computer. Furthermore, more than one third of the people in households where there is one, declare that they do not know how to use it. This may be largely a question of generation, training and apprenticeship which we can hopefully expect to be overcome within the next twenty years. The apprenticeship at school and during professional life will be powerful encouragements to cultural adaptation to the new technologies. The other two questions, on the other hand, raise numerous questions as to the distribution of communication services and technologies in everyday life. If we take the example of the cellular phone, it is clear that the apprenticeship here is relatively minimal. The questions of economic accessibility, in other words the solvency of households and individuals, and the advantages got out of the use and the usefulness actually felt, will determine the distribution of the cellular phone.

The stagnation of buying power limits the distribution of new products

2. The solvency of households, in the context of an economic crisis and the stagnation of buying power is a determining element in the distribution of new products. Other than a traditional television set and the telephone, the present household equipment level obviously depends heavily on income. If we compare the French household equipment rate of those with less than $1,500 per month with that of the households where income is over $4,000, we can see considerable differences. These differences are less marked as far as the penetration of mass media technologies are concerned (cable television for example) which varies from one to two from the lowest to the highest income brackets. On the other hand, the differences are much more marked as far as the most recent technologies are concerned – the mobile phone (from one to three) or the most expensive – the computer (from one to four). The differences are even greater when we consider the simultaneous presence of several items of equipment in the same households: i.e. those who have taken out a subscription to the cable network, have a cellular phone, a PC and peripheral telephone equipment (fax, answering machine) only represent between 1% and 2% of all French households – the vast majority of them belonging to the highest income brackets.

When you have to pay your telephone bill, buy the television licence, take out a subscription to be cabled, get a cellular phone or a personal computer, connect up to a data transmission network, and furthermore, renew this equipment regularly, all of this adds up to a budget which will continue to be outside the financial possibilities of many a household or individual. Most households will not have the necessary level of solvency to be able to have everything – they will have to choose amongst the various types of equipment and services. Thus, rather than talk about "haves" and "have-nots", as most official reports do, it would probably be better to talk about the distinction between the individuals or households who are "with it" and will have all the equipment and services, those who only have part of them, and those again who will only have the basic services (television and telephone). We must add those who have nothing at all to these three groups – even if they are few and far between. This new perspective enables us to consider the domestic penetration of new technology in a much more differentiated and precise manner than the information society prophets usually do. The penetration rate into households for each new technology will largely depend on the choices which are made by all those households which can only buy part of the equipment and services. The level of solvency of the households will also have repercussions on the volume of use of the equipment and services.

Single payments add up to a budget outside the financial possibilities for many households

We need to rethink the domestic penetration of new technology in a more differentiated and precise manner than the information prophets usually do

3. Why bother to equip? In other words, what satisfaction, what advantages will households and individuals get out of these new technologies? Even if a certain number of households could be sufficiently solvent, their answer to this question will largely determine the market for new services. Here, the mechanisms linked to what we call the "club effect", but also the mechanisms linked to mimetic behaviour in the consumer society, play an important role in the distribution of new technologies and new products. If we take the example of Minitel in France, which had total technical accessibility (the telephone network), high economic accessibility (the terminal was distributed free of charge), it is noteworthy that the rate of distribution in French households remains quite low – around 30%. But Minitel offers some 30,000 on-line services: information services, transaction services, entertainment services, conversational services. It can be used to manage one's bank account, to make telepurchases, reserve a train or plane ticket, rent a flat, play, dialogue, consult data bases. In other words, the whole field of everyday life is covered by the services which are available. The results, other than its use as an electronic telephone directory, are that the people who have a Minitel at home only use it on average once a week. We must therefore admit that there has been no real revolution in everyday life, even if Minitel was there to simplify things for so many people.

The "club effect"

People use Minitel only once a week

The limited distribution of Minitel comes from the question we are presently asking. Why bother with this type of equipment? The same will be true for the

distribution of other new information and communication technologies. Whence the search for the killer application, the equivalent of the free-of-charge electronic telephone directory, which represents 40% of the use of Minitel in France. But this example shows that even when the killer application has been found, it will not always be sufficient to generate a wide enough distribution of new information and communication technologies. When, today, we ask households or individuals about their wishes for equipment, and even more, their future purchasing intentions as far as new technologies are concerned, we can only note that most of them, over two-thirds, have no really specific desires or particular intentions. The most commonly evoked reason is not so much price as the lack of need and usefulness. It is thus interesting to analyse the needs of users, the social uses and the processes of getting accustomed to technological innovations if we wish to carry out a more rigorous projection of tomorrow's domestic communication markets. The analysis of a certain number of domestic communication models will enable us to designate some of the trends.

The main reason to avoid new technologies is not so much price as the lack of need and usefulness

Diversification and Increased Complexity of Communication Models

Technological innovation and product innovation, along with the evolution of lifestyles, will bring along a diversification and an increased complexity of the models of residential communication. This diversification will show up through the different levels of equipment, the types of equipment and the contrasting types of use. This differentiation and this complexity will come from the hybridisation of a certain number of contrasting models of communication in everyday life.

Nomadism and Cocooning

Communication cocoons and nomads live in or move along with their telematic bubbles

New technologies make the following two new types of behaviour possible : closing oneself up in a telematic bubble, or transporting the telematic bubble along with one. The first model is cocooning, the second is nomadism. In the first model, thanks to fixed technology, it is possible to have the world come to you: in the second it is possible to globetrot while remaining in constant touch with one's home. These two communication models are a relatively good way of distinguishing the telephone practices of active people living alone (more nomadic) from inactive people living alone (more cocoon-minded).Whether they be working or non-working, single people living alone telephone much more than the general population average. For many reasons, they are multi-communicators. On the other hand, the analysis of their telephone habits shows two contrasting communication models. For younger working single people, the telephone is a means of managing their free time, their social life, their leisure. From this point of view, the telephone leads to outings, meeting people and face-to-face communication. For non-working single people, the telephone is a way of using

Single people living alone as "multi-communicators"

up free time, chatting, spending time with friends on questions particularly pertaining to their private lives. Here, the telephone is a means of remaining in contact with one's network of friends without leaving home.[5]

The nomadic model is compatible with modes of life for which personal and/or professional mobility is high. Mobile communication technologies are excellent tools for management, for the organisation of that mobility and the activities which are linked to it. Always on the move, nomadic man must remain in permanent potential contact with his home, his family, his friends, his relations and his professional relations. He must be able to be reactive, and miss no opportunity. He must be in a position to utilise the considerable time he spends moving about. The sociability of the nomadic man is high, and it is mainly external, that is to say a sociability oriented towards outings, entertainment, relationships with friends. At one and the same time, he is therefore mobile, a communicator and someone who meets people. Mobile technology enables him to avoid useless trips, but also to prepare, to organise or simply to make the best of unexpected encounters, just like programmed meetings. The nomadic man who crosses the borders belongs to the global village. The services offered by the new television are not essential for him.

The nomadic man crossing the borders belongs to the global village. The services offered by the new television are not essential for him

In contrast, the cocooning model is compatible with ways of life which are characterised by remaining in the home. The idea is to reduce mobility as much as possible. Everything which favours the reduction of daily mobility is preferred. The cocooning model developed considerably with the distribution of television and the model of the Victorian family. In such a model, entertainment services (cable television, VoD, video games) and transaction services (teleshopping, bank, insurance and administrative services) are what are wanted. The cocooned man is an immobile nomad. Bring the world into the home – such is the logic of the cocooning model. Sociability can be high or low; it is preferably interior, that is to say centred on the home, whether it be the person's own home or that or those who are close to him.

The cocooned man is an immobile nomad

Entertainment and Utilitarianism

Nomads and sedentary people can either be players or managers. The new services which are developing concern both entertainment and the management of everyday life. One can be interested in both, but at least to begin with, the choice of equipment and the uses by individuals tend to develop in one direction or the other. These are the masculine-dominant models.

Entertainment and games are privileged areas for the development of communication technology. Entertainment is the special market segment for television, just as games are for consoles and computers. Entertainment products and services will probably be the best motors for the distribution of new technology in the home. The monopoly of general interest television, which has little of real interest to show to a nevertheless captive audience, is coming to an end. Whether

5 Gérard Claisse, Frantz Rowe, The telephone in question: questions on communication, in Computer Networks and ISDN systems, n°14, 1987, pp. 207-219

Entertainment products and services – best motors for the distribution of new technology in the home

the new television be specialised, cable, on demand or more or less interactive, it is going to find its place in this entertainment market. This does not however mean the death of general interest television which holds on to a considerable market share (60%) even in a highly cabled country like the US. Entertainment is also one of the best reasons for the purchase and use of home computers either by, or for, young people. Approximately three-quarters of those who have a computer in their homes use it for games – half of them play regularly, i.e. several times a week. On-line entertainment and games services also represent a substantial source of revenue for the communication industry. The entertainment model will be quite weakly interactive and will remain essentially passive, which means that there are not going to be any really considerable markets available for the highly interactive services provided by television.

Three quarters of those who have a computer use it for games

If man is a homo ludens, he is also a homo faber. The utilitarian model quite well characterises the telephone habits of active men. The telephone is principally a tool which enables them to manage activities linked with their professional life and their social life in constrained time. Information services, consultation services, transaction services, management services, are all being distributed and make it easier for individuals to manage everyday life. This utilitarian model has principally been developed on the basis of an apprenticeship lived out in the professional milieu. It develops in households which have to deal with strong temporal constraints. The entertainment model uses up free time, the utilitarian model enables constrained time to be managed. It is more urgent here to connect to on-line services through a computer than to have 100 extra television channels. In the utilitarian model new technology enables work at home to develop, and can even favour certain types of telework. More than two-thirds of the individuals who have a PC at home say they use it for working or studying: Of those about two-thirds use it for their work or their studies at least several times a week. This model is more interactive than the entertainment model, but it is not principally conversational.

The entertainment model uses up free time. The utilitarian model enables constrained time to be managed

Distribution and Interaction

The models of distribution and interaction tally with two fundamental communication models. The distribution model corresponds to the traditional model of a sender who transmits information through a channel to a multitude of receivers – the mass media model. In the interaction model on the other hand, individuals are both senders and receivers in turn – this is the traditional model of interpersonal communication. The development of interactive technologies and services is supposed to rule out borders between these two models – we hypothesise that both will resist this virtual scrubbing.

The development of interactivity is necessary for the correct functioning of the distribution market

The communication sector has entered the market economy completely. This means that the elements of the traditional communication model are no longer the sender, the channel, the message and the receiver, but the producer, the distributor, the information goods and the consumer. The development of inter-

"The interaction model becomes richer thanks to new technological possibilities."

activity between producer and consumer is necessary for the correct functioning of the distribution market. The interactivity which develops in the distribution model enables the transaction between producer, distributor and consumer to take place. In the distribution model, private individuals are fundamentally consumers of information and communication services. This trend corresponds to the generalisation of the mechanisms of the consumer society to the communication sector and to all non-material production. The distribution model therefore becomes more specialised and of less general interest. The distribution of new information products and services fundamentally depends on the solvency of households and the social symbolism which sets itself up around new consumer symbolic objects.

More options: the interaction model becomes richer

The interaction model remains largely outside the market sphere – it is more the model for the exchange of non-market information; it is the reciprocity model. The private individual who communicates is both sender and receiver. Conversational technology and services are sought after. Interactivity is no longer a condition for the transaction, it is the condition for communication. The interaction model becomes richer thanks to new technological possibilities which enable the transmission of sounds, static or moving images, and data. Apart from the conversational services of the traditional or cellular telephone type, which are the major market segments, the interaction model can come to develop in certain households, but in a much more limited manner, with the development of telework at home, and interactive television. The interaction model may also develop, to a moderate extent, with the coming of a group communication model, corresponding with the arrival of virtual communities in a constant state of change.

Communicational Zap and Social Links

Communicational zap: communication for the sake of communication

Interpersonal communication is fundamentally a process of the sharing of meaning, intentions or projects among individuals. From this point of view, communication takes part in the socialising of individuals : it is the model for social links. When communication becomes communication for the sake of communication, or even when it is reduced to the exchange of signs and not of meaning, it becomes a simulation model which we will refer to as communicational zap. In the social link model, communication is the complex insertion mode for a complex individual in a complex environment. Communication is part of permanence and duration. Alterity and empathy are the conditions for communication, sharing of meaning and intentions. The Other is the object of every solicitude. To a certain extent, communication technologies are prostheses which enable us to maintain and even develop our networks of relationships, our social insertion, and our participation in the life of the city. In the social link model, individuals communicate and meet up continually; in the communicational zap model they interconnect and may meet up accidentally.

Communication technologies are prostheses for social links

In the communicational zap model, what is important is not who is communicating, but that communication is taking place. The individual belongs to a multi-

The zapper or surfer on social relations

tude of virtual networks or tribes. After having invaded the sphere of the communication of objects, the ephemeral and the obsolescent are contaminating the consummation of conscience and social relations. The individual becomes a sort of zapper or surfer on social relations, interests, beliefs and undertakings. Social relationships can develop for an instant, but they rapidly become obsolete. The nomadic individual goes from one to the other of the new opportunities, the new communities, the new experiences which are offered to him, just as he would change channels. The generalisation of "the event", new services doing away with old ones, the coming of new so-called virtual realities, all develop the communicational zap. Communication is no longer a question of duration, but of a moment in time. The communicational zap model favours anonymity, even anomie, in interpersonal relationships. Simulation develops, as the mode of a whimsical individual's means of ludic insertion into a manipulable or virtual environment. The Other is no longer the object of solicitude (alterity). It has to be reinvented inside oneself (a process of personalisation). We communicate as much, if not more, with ourselves as with the Other. Apathetic and frivolous solitude tends to replace empathic solicitude. The communication habits which have developed on the French convivial telematic services are characteristic of this communicational zap model.

Apathetic and frivolous solitude tends to replace empathic solicitude

Communication and Decommunication[7]

All the preceding models are distinctive communication ones. They designate all the market segments for certain communication technologies and services: fixed terminals, conversational services and the distribution of immaterial consumer products. Tomorrow's communication will be plural and come from the crossing of these different models. Tomorrow's "with-it" people will have access to and will develop communication habits which we could refer to as "communication gone wild", made up of the hybridisation of different models. This is the model of hypercommunication – communication as a value and as a tool for the management of everyday life.

Hypercommunication: "communication gone wild"

Parallel to these different communication models, we believe it is important to point out that decommunication models, which must not be underestimated, are also developing. The decommunication models, which we could also refer to as non-connection models, or even declared disconnection models, often play a role in communication hygiene. Obviously, a decommunication strategy is always relative and selective: it is only exceptionally that someone disconnects from the network. More often, the person disconnects from certain networks or protects himself from the electronic promiscuity and the perverse effects of media immediacy. Disconnection strategies have been at work in relation to television for several years: either because the person has done away with the television set, or because he only watches it very rarely. For the French households which do not have television, we can consider that this is an explicit and durable choice. Furthermore, it can be estimated that 10% of the population either never watches television, or only does so very exceptionally. These habits are marginal, but are tending to increase.

Relative decommunication

6 This wording "decommunication" has been introduced by Pierre-Alain Mercier and Yves Toussaint in Communiquer demain: nouvelles techniques de l'information et de la communication, ss. la dir. de P. Musso, DATAR, ed. de L'Aube, 1995, 287 p.

The analysis of individuals' telephone habits also enables us to see the strategies either of decommunication, or selective decommunication. Lifting the receiver off the hook, not answering when the phone rings, having someone say that one is not there are some of the attitudes of selective decommunication. These habits are not frequent either, but they do concern approximately a quarter of the number of subscribers at least from time to time. The answering-machine used to filter calls, services which identify the caller, being ex-directory, all take part in the development of this electronic communication hygiene. More than half of the individuals who have an answering machine use it from time to time to filter their incoming communications.

Selective decommunication as a way to electronic communication hygiene

These examples are well known. Most individuals who undergo the stress of hypercommunication need to disconnect, set up filters and barriers between themselves and their environment in order to become more selective, or simply to give themselves breathing space. The analysis of the social use of mobile technology shows up a large number of communication hygiene strategies which may go as far as the choice of the service (pager versus mobile phone for example), the more or less parsimonious manner of giving people one's mobile telephone number, or simply deciding to switch the mobile terminal on or off. Similar strategies are to be observed on the Internet: we begin by subscribing to distribution lists and forums, but faced with the avalanche of messages and the excess of information, we stop our subscription. All these types of behaviour are more part of communication hygiene than a real decommunication model. They point to a considerable market segment for all the techniques and services which enable filters and barriers to be installed, and pertinent information to be selected, as well as to protect one's privacy, or indeed to allow time-delayed management of the electronic immediacy.

A considerable market segment for techniques and services which enable filters and barriers to be used

Essentially, the decommunication model is virtual, or "about-to-be." But at the present time, we must not underestimate its importance. Many a household, for example, does not want to be cabled, either because they are perfectly satisfied with general interest television, or because they have no time to watch television, or because they want to protect their children from the risks of "the box." In France, where approximately 10% of the households are cabled, more than 80% of the households which do not have a cable subscription say that they do not intend to subscribe within the coming year. These declarations may partially be the result of resistance to change or resistance to technical progress. But these declarations are just as much the expression of a proactive attitude towards decommunication, a refusal to allow television to invade the domestic space. The same observations could be made about subscribing to a mobile phone system. It would not really be true to think that most people would like to have a cellular phone even if the price were right: 80% of French people say that they do not want a mobile phone. In this market segment, many people adopt a proactive decommunication attitude, and not only a reactive one, because they do not want to be able to be contacted anytime anywhere. Another proactive decommunication

A proactive attitude towards decommunication

"Innovation (...) is never the naïve entry of innocent objects into a virgin space."
Yves Stourdze

New barriers between public and private spaces

attitude, or rather an attitude of partitioning communication spaces, is to draw up new barriers between private and public spaces, between domestic and professional spaces.

This new communication hygiene, these strategies of decommunication or non-connection have usually been ignored by the prophets of the information society who are fascinated by the communicational abundance which they promise. But in conclusion, it is this communication hygiene, or rather the ethics of communication, to which we wish to invite the various actors who have decided that their mission in life is to build the society of tomorrow which they call the information society.

Technology is not neutral, it does not fall from the sky like the apple which fell on Newton's head. It is a social production which has a time and a place. Technology integrates itself, adapts and is distributed according to the economic, social and cultural characteristics of the society which uses it, just as it directly or indirectly transforms, valorises and devalorises the economic, social or cultural activities which are linked to it. As Yves Stourdze said: "innovation (...) is never the naïve entry of innocent objects into a virgin space".[7] When we read the numerous reports on the economic and social stakes for new technology, we often get the impression that only a part of the process has been analysed: technology is distributed and radically transforms the everyday life of individuals and society, and this transformation is analysed as being a unilateral process of valorisation.

Suffering from "electronic ubiquity syndrome"

The authors often seem to be suffering from electronic ubiquity syndrome when they think of the relations between technological change and social change within the framework of the problematics of real time (immediacy of effects), distanceless space (the universality of the effects), and perfect information (the omnipresence of expertise). To this often prophetic perspective and projection, we wish to oppose the ethics of reserve, modesty, and prudence, which could be expressed through the following three ideas: taking one's time, letting distance play its part, and getting knowledge in order to think out tomorrow's communication. It is only if these conditions – taking one's time, letting distance play its part and getting knowledge – (and no doubt others) are fulfilled that we will be able to think out the Ma' Bell society – the nickname given to the telephone company founded by Alexander Graham Bell – without building a new Tower of Babel.

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Dedication – The Culture of Private Communication in a Realm of Uncertainty

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"Dedication is an individual and even a social answer to the low involvement policies of short termism in modern societies without necessarily falling back into conservativism ... dedicated communication is more than just being formally addressed. It's the perception of being taken seriously as an individual and as a personality. It has something to do with the feeling of being accepted."

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Easy going and easy selling techno hype

When authors write articles on "multimedia" their recipe usually seems to be confined but still diverse, but the ingredients tend to be more or less the same: take an ounce of Nora and Minc, a piece of Gates, and season the dish with some Negroponte. The new world of multimedia apparently needs prophets and visionaries, but there is good reason to assume too that the positive function of an "information" revolution in the private home, deeply rooted in techno belief, is hastily swamped by new sorts of easy going (and easy selling) techno hype.

There's no doubt that people would not be telephoning today without the adventurous life and work of early inventors like Philip Reis or Alexander Graham Bell. Nobody would drive a car without Karl Benz and Gottlieb Daimler. Yet such simple labels for complex innovations are already challenged by economists who argue that it takes a Henry Ford to make a car affordable and even worse by historians and political scientists asking if it did not take Hitler to smoothe the way to new dimensions of road traffic. As we admit in times of political correctness: at least the latter is not true. Hitler did not invent the Autobahn. Moreover there could have been a path to an effective highway system without the "German" Autobahn and its immanent compulsion to instigate a war. And, as we know today as well, the private car was no easy way to paradise. Today we are confident that the train system(although outmoded in the fifties and sixties) will not be completely replaced by the automobile. Its renaissance has just started. So why don't we learn from older innovations as we enter the era of a new one?

Learning from older innovations

It was the strong belief of the creators that made innovations happen, but it took an even stronger will to assess the effects of technological changes and to reflect on ways to avoid the unwanted outcomes of those "revolutions". Should we really blame the visionaries of the multimedia age for their dreams? It seems much more the case that the obedient misinterpretations of their blinded followers, unable to identify the new communication quality of the "new media age", are the cause of a dangerous phenomenon, which I would like to call the "streamlining of ideas" (one form of "infantilisierung" which has been discussed in the introductory chapter) which may prevent us from taking the challenge to go a step further towards an open communication society.

Communication in a Multichannel Environment – Will the Mass Media Survive?

New communication environments as "integrated media"

Until now mass media products have been dominant on markets for entertainment, information and education in the private home. There is a tendency to create new communication environments as "integrated media". The basis of this process of integration is technological convergence (Baldwin et al. 1996). The somewhat strange assumption is that the consumer is *waiting* for a new technological multimedia environment in which text, still pictures, graphics, sound or moving images are integrated. The process of digitalisation, by which all sorts of

"The scenarios of interactivity are contradictory and the actors have to struggle and to survive in a realm of uncertainty."

data could be encoded into the same electronic pattern, is made responsible for a renaissance in communications. Some people speak of a digital revolution and others even forecast the future of mankind as "being digital" (Negroponte 1995). For the moment, interactivity in the private home has not found its key application. Visible is the failure of innumerable trials (F&F: Tables 7.1.2.1-7, p. 316ff.) with "wrecked hopes and misbegotten plans" (Gilder 1994). The scenarios of interactivity are contradictory and the actors have to struggle and to survive in a realm of uncertainty. But so what? Isn't this just normal life? Only an addict or a neurotic character would take his personal obsessions as an *immediate* and structural change of the *whole* society. The hysteria about multimedia in the private home is based on a severe mistrust and unwillingness to accept the capacity of societies and their citizens to cope in a natural manner with technological change. The "lost-opportunity-phenomenon", which is the drama of the impatient lover or the rejected nerd, explains social change arising from digital in terms of "yes" and "no" or "now" or "never". This is in fact totalitarian and an indicator of a severe misunderstanding of culture and humanity.

Interactivity has not found its key application

There is no need to hasten away into the multimedia world. If there were no new markets anticipated nor huge profits to be gained alone with the pressure of international competition, the marketing for multimedia products could "slow down to reason" and the decision makers in their private homes could wait for better solutions.

The "lost-opportunity-phenomenon" as the drama of the impatient lover

People in general just don't know which products they intend to use in future and only a few among us are waiting for a *specific* new technology. People may expect communication solutions for communication problems they actually have, without having any need or suitable opportunity to *define in advance* what they really want. So instead of building new credos on what new service, software or technical device people may want or even should want or use, communication research, assessing new markets may work on finding out what people actually do and what they would actually like, and in particular what they don't want. This research should at first be independent of technological systems.

Obviously people seek arousal and they feel uncomfortable when they are bored. TV rapidly became the principal source of entertainment and information in the private home. But its peak is over. The growth rates of usage which we experienced in Europe immediately after the broadcasting markets were opened to new competitors in the early 1980s are not attainable any more. Although there is no heavy decline in usage yet, the stagnation of time spent watching TV is obvious. The enthusiasm of the first TV generation is gone; more and more people sit apathetic and listless in front of their screen and blame the broadcasting companies for the fact that the programmes have got worse, although in fact the variety of programmes offered is larger then ever before. A German TV viewer may now choose from 16,000 movies per year. This means almost 45 broadcasted movies are at choice per day. The value added service of interactive

TV's peak is over although there is more variety

TV would be at best an additional daily choice out of those 750 new movies per year produced for example in US., Italy and France together. This is not good enough for a cultural revolution through video-on-demand. TV as a system has for this reason to do more than just increasing selectivity. The well-educated people are at the forefront as TV absentees. Even heavy TV watchers are more or less fed up with the screen, because they know it so well and they love it so much.

TV is loved to death

TV is loved to death. It's like the crisis in a long-lasting marriage, in which everything is fine, but the critical impulse of curiosity is not vivid any more. Hence a growing community of people has had enough of TV and a decisive minority doesn't even watch it anymore.

The death of the mass media does not mean that the large audiences are dying out.

The first and major precondition for a functioning TV(broadcasting) system is a large number of viewers and listeners. "At one time, television was a medium with audience masses of incredible size. Television continues to aggregate audiences on this scale but now disaggregates these audiences as well" (Baldwin et al. 1996). The future of mass communication is now addressed as if mass communication in a realm of individual and interactive communication were becoming extinct because the larger audiences, which seem to be necessary to finance the production of lavish screen attractions, are dying out. But the death of some of the classical forms of mass communication in the long run has nothing to do with the size of the audiences. It could be predicted for theoretical reasons through a change in communication patterns within the traditional media before the common carrier communication networks do away with the old distribution channels.

Attractive programmes rather than new technologies will be the powerful locomotive for success in the market.

But the situation is not that simple and even if we wanted – culturally and economically – to get rid of the screen in the private home, TV remains the cheapest and the most cost-effective form of entertainment. Although the general attitude towards TV usage – at least in public – may be negative, the TV screen is still a much loved companion through the trials and tribulations of life, and an easily accessible tool for entertainment. The audiences for an individual product within a multichannel context may get much smaller at a specific time, but audio-visual products still may reach a larger audience if they stay long enough in the market on a variety of "individualised" distribution channels. Innovative ideas for new types of content will still find their mass market in the future. In the years to come, attractive programmes rather than new technologies to disseminate interactive products will continue to be the most powerful locomotive for the broadcasting industry.

The Disperse Public and the Death of the Mass Media

The mass market will only break away in marginal areas.

The mass market will only break away in marginal areas, but the competition between traditional broadcasting and video on demand will speed up. Whereas the attractiveness of the majority of classical entertainment products, like plays or movies, were originally made to last, new genres of entertainment, like shows or

magazines, emerged within the frame of broadcasting media. They are intended to be consumed immediately and become quickly obsolete through information decay. The Zeitgeist demands novelties but there is still enough room to sell reruns and replays. Only a few audio-visual entertainment offers die as quickly as actual news, but those are the products which will be faced with a lack of an integrated audience. Whereas through a differentiation of distribution channels more and more people may have the opportunity to see the same movie, the possibility of an integrated public debate or reflection on the same political magazine may dramatically decrease. This is the reason why it has been predicted that there will be an erosion of public life in the realm of multichannel choice.

A cornucopia of new opportunities

But once again the analysis of social effects is not that easy. If media usage generally tends to be high, and even if there is a shift in usage, nobody would seriously argue that the media in general are less attractive. New media like the WWW in the Internet are coming up with a cornucopia of new opportunities for information and distraction. If an event has a strong hook to attract an audience it will be widely covered and there will be a common basis for a cultural reference among individuals. But the media-oriented viewer will have to give way to occasional viewers and they will be only reintegrated in cases of *very* important and considerable events. Moreover, the multichannel broadcasting system destroys the distinguished and prominent persona which it has to reconstruct at the same time with even stronger efforts to attract a larger audience.

Masses never really existed. They are theoretical constructs of power.

The masses which the mass communication systems intended to *deliver* with their productions never really *existed.* Mass communication as well as mass production in general is a phenomenon in which you assume that individuals could be treated as masses for economical reasons. To describe a number of people as being a mass and to "average" people by this means is a purposeful and decisive perspective of power (Canetti 1980). The most important element to define mass communication according to Maletzke is the idea of dispersity. As the producer cannot know and does not want to know the specific person he intends to approach with his product he uses a statistical artefact to deal with his public as average. The "mean" idea behind mass communication is the least objectionable programme for an agglomeration of people, which is built through the metaphor of a joint target market. The mass audience cannot be served as an inspired individual. But neither do people really exist as averaged masses nor do they ever communicate that way. Even if they are dealt with as masses they remain individuals. So the size of an audience is not the most important criterion to define masses, it's the lower level of knowledge which the producer naturally has in relation to his public. New types of communication in a new communication environment may now and in future generate new knowledge about the consumer. In so much as the choices on the market seem to be personal so too will the idea fade away that the mass market will be a mere delivery system for a dispersed and unknown public. But the lack of knowledge will and should not disappear completely. Even in interpersonal communications, in which we assume that

The "mean" idea of the averaged user

the participants should more or less know each other, the necessary stereotypes try to "average" us. But although we are used to dealing with those "averages" in private communications the appeal of the *alter* ego is the driving force to be curious enough to communicate.

A wrong assumption: The more you communicate – the happier you are.

Individual communication is the same theoretical construct as mass communications. Media usage diversified within the last decade and this trend will continue to persist in the multimedia age. One of the myths of the so-called "Age of Information" is the implicit assumption that modern societies have a general tendency to increase communication continuously and that there is some sort of a natural law for the development of each individual which could be summarised as: "the more you communicate the happier you are". The traffic within the telecommunication networks is constantly growing and it is true as well, and could be empirically shown at least for the telephone, that the more people are successful in their professional life in terms of income and education, the more they tend to have a network of diverse social ties and a capacity to show communicative competence (Lange 1993). But nobody really intends to communicate: it just happens.

Specificness and Uniqueness as Preconditions for Dedicated Communication

Communications are specific and unique.

Think of the following situations: a personal talk on the telephone, a dialogue between two journalists, a discourse among scientists, the chit-chat, gossiping and tittle-tattling in your neighbourhood, the chatter of some aunts at a family meeting, the patter of a salesman, the jabbering or prattling of a scientist in a night club, the babble of a child, the drivel among students, the giggling and tittering of young girls in the street, the shrieking and squealing of a drunken crowd at a fairground in the ghost train, the female twaddle which seems so typical from the perspective of a man, the gibberish of some Bulgarians which you don't understand because you haven't been smart enough to learn their language, or take into account the acoustic nonsense of Monty Python on TV. No intelligent and sensitive person would use only one word to describe such experiences – especially not for the sake of simplicity. Nobody would think of such vivid atmospheres of specificness and uniqueness as "communication" – unless he is a communication scientist.

Nobody knows what communication culture is like.

It is the same in the fields of the arts and "official" culture: which painter would think while painting or manufacturing a piece of art that he was creating a piece of "culture", which actor would do the same while acting and which author while writing? So if I talk of the culture of communication and avoid accuracy in describing the real creative context, it appears that I am actually not creating any type of it. While using the designation "culture" it seems as if I'm only *accounting* activities to differ them from other more general types of activities, like industrial work, administrative services or scientific research. But, as you know, culture as a

"As much as people get frustrated and bored from 'reality' outside of their home they demand more dedicated experiences in their personal and private life."

concept could be used in a much broader sense. Industrial, administrative or scientific work could be called culture as well because every human activity contributes at least something to the change of culture, sometimes it really gives a positive impulse and improves culture, but customarily this is done more or less without intention – the motives as well as the goals behind a specific activity are usually less general than to create just culture. The communication culture we create is the variety of occasions which we prepare to *allow* communication to *happen*.

The notion "dedication", which is a conglomeration of connotations, including "being directly addressed", "devoted to" and "involved with", may be a guideline to describe the desire to vividly enhance communication environments. Dedicated communication needs the freedom of failure and the challenge and mastering of choice. It may be less perfect than traditional mass communication, but through a lack of distance the emotional involvement may give a different appeal. A trend and an expectancy towards dedication is not limited to media usage. More and more people expect a plus in dedication wherever they are and whatever they do in their leisure time. As much as people get frustrated and bored from "reality" outside of their home they demand more dedicated experiences in their personal and private life. The less people may intervene in the "construction" of their economy and technology, the more they may intend to "build" and to invest in their private homes. Others may feel the limitations of "having" to stay there and may look for new opportunities to transcend their "chosen" isolation.

Dedication:
- being directly addressed
- devoted to and
- involved with.

Dedicated Communication

"Dedicated communication" is not a new sort of communication. "Dedicated communication" describes the tendency of consumers to choose new communication environments in which they feel more involved and personally addressed, without being necessarily reduced to less attractive forms of interpersonal communication. Dedicated communication could be either mass or individual communication. But it embodies a new shift towards more personalised and more intensified experiences. There may be a lack of dedication in both directions. Neither the "perfect" industrial mass communication product nor the sometimes irritating or even troublesome "active" individual communication may guarantee an adequate stimulus. Communication could be judged in this respect in both directions or as Churchill already pointed out for the western democracies: they aren't perfect but appropriate solutions to social problems.

Dedicated communication could be either mass or individual communication

Mass communication products are created in an industrial context and perfected through a professional division of labour. In dedicated communication environments the sender or producer has more knowledge about the later user and will create his product much more specifically than in a classical mass communication environment. Although you may find devoted and specialised listeners, readers or viewers in mass communications, and although they may

"Feedback" and Dedication – Knowledge about the later user may now become effective.

More choice in a plurifying media setting

even feel actively involved and deeply touched, specified dedication was structurally restricted by the scarcity of channels, and the early motivating enthusiasm for the new medium – which made the scarcity less visible – is nowadays gone. This is why most of the users did not care too much about dedication in choice. The dedicated choice, which the system could not deliver, was compensated with the dedication escorting the incredible fact that such technological wonders were economically and technologically *possible and accessible* for everybody. This is the reason why some of the older users still have difficulties today in adapting to the new multichannel world. They stick to their channels with loyalty and miss the common media experience with their fellow family members. Especially those people who were not dependent on decisions of other people for the choice of which programme to watch, seldom articulated the desire to get a "better" programme dedicated to them. But young children and even women suffered from a lack of influence on programme choice and are better off with their personal views in a plurifying media setting with a multiplicity of channels and several TV sets in the private home.

New levels of selectivity to enhance personalisation

It took a diversified mass communication system to cultivate the desire to sophisticate personal choice. The notion "dedicated communication" could be useful in this respect because it describes a way in which the modelling of products in relation to target groups could be understood as an integrated approach to overcome the hurdle of "mean" culture on a new level of selectivity, although those artefacts are still tailored mass products. Their range of usage lies within the frame of an averaged professional product for a diffuse public, but the dimension of personalisation may already be enhanced. But dedication goes far beyond the extension of selectivity. The arousal of the common group experience in media usage, which is not given any more in the selective setting of the individual, amplifies the wish to assert new claims on an intensified and devoted experience. The lost world of the *former* dedication (in relation to communality) can not completely be compensated by the *new* dedication (in relation to choice). This is why successful programming even in a world of selective markets will have to reintegrate communality on a new level. Media marketing in the world of dedicated communication turns into event marketing, events which are made to deliver new substitutes for the common media experience of former times.

Dedication and the reintegration of communality

Interpersonal communication, on the other hand, in which we assume that the communication partners are more or less known to each other, may enter the realm of dedicated communication as well as a consumable paraprofessional product. Dedicated communication in this respect could be attractive because the individual may want to receive new types of messages, which are not strictly speaking mass products, but have been created *individually* and solicitously *for a larger audience.*

Dedication is more than just interactivity or selectivity

Dedication should not be mixed up with more functional terms like interactive or selective communication. Dedication implicitly includes an evaluation

of the depth of personal involvement. As the borderline between low involvement usage and the highly devoted usage of mass products may be fluid, dedication refers to the difference between the highly and sometimes even extremely addicted fan and the *normal but passionate* consumer, which is the model for the dedicated user. If producers refer to a devoted public they very often address a juvenile fan public, whereas the much bigger market segment of passionate and dedicated consumers and their gourmet capacity to select is more or less neglected.

"normal but passionate"

As with the notion of "entertainment" nobody could say in advance what entertainment actually is, but people know if they feel entertained, in retrospect at least. So dedication is not an analytical but a normative category which is related to the *desirable*, which may vary from person to person, but people know about their desires and passions and prefer to get tailored mass products which at least seem to be dedicated to them. Dedicated communication is more than just being formally addressed. It's the perception of being taken seriously as an individual and as a personality. It has something to do with the feeling of being accepted.

Dedication is normative and not analytical

The regional, religious or political cultures secreted social acceptance. They delivered opportunities to build up more or less stable identities or served as milestones and identifiers of deviance and resistance. For some time the decay of those meaning delivery systems was absorbed by the growth of the importance and acceptance of the mass media. Now as the media systems are in the same crisis of legitimacy as the traditional systems they survived, *community* becomes a new issue in how to build up the necessary rooting within the new social frames, independent from the integrated and reasoning public of the mass media. The "taste communities" (Ladeur 1986) were the first step towards the disintegration of the already diverse but still more or less homogeneous mass markets of the era of the integrated and reasoning public. As soon as the taste identifiers moved from stylish and social significance to tribal and accidental, the *intensity* of living emerged as a new concept to qualify media experiences. At the same time as the integration function of the big cultivators religion, nation and political orientation and mass media started to be replaced, new permissive lifestyles emerged, which yielded to new demands for new tools to co-ordinate a plurality of lifestyles. Fewer people get up at the same time, fewer people take their meals as a common ceremony and fewer people work or go to bed in comparable time slots. The growth of convivial tools (Claisse 1989) was the pragmatic answer to this factual disintegration, the "Wahlverwandschaften" of chosen friends turned out to be its idealistic equivalent. But in an individualised context each person has to deal with his or her own character as being a stranger to her/himself. The community problem turns into a psychological problem. The less the permissive social life is your enemy and the others refuse to be your competitors, the more you are obliged to look outside for the necessary "kick" or challenge. So the importance of media experiences is growing to bring at least some variety into the home and

Dedication and the intensity of living

The alter ego as a new stimulus

the alter ego as a new stimulus. The entertainment industry acts as if people unanimously expect only *distraction* at home, but there will be a new market for edutainment, gaming and leisure work which is not at all developed yet.

The Off-line-Generation – Plattforms and Levels of Dedication

The "mobile" and the "personal" – strategical platforms towards dedication

The trend towards making communication more dedicated, or the growing attitude of consumers to use media as dedicated followers of new cultural or new communication patterns is not related to a specific technology. There might be an element of dedicated communication in a more selective usage of the TV screen; the success of the mobile phone, the "handy", could be rooted in its capacity to serve as a personalising and intensifying device instead of the less accessible household telephone; and the computer may open the door to an individual choice of distracting entertainment instead of the TV set. The TV screen is still considered a household technology although there is a rapid growth of a second or even a third TV set in private homes. The computer is taken as a personalised technology, although the software is a mass product and dedicated to an even broader audience than some of the mega events which gather a large scale public in front of the TV screen.

Limits and bottlenecks for dedicated communication

Strategically there are different approaches to bringing dedicated communication to the private home. The French Telecom used the private telephone to link the low resolution Minitel to a new world of databases, whereas the German Telecom favoured – rather unsuccessfully – the private TV screen as a means of a display for Btx. Internet access in the USA, which seems to be for some people the ultimate solution for a mass market of interactivity, owes its internationally higher level of penetration to the fact that American telephone companies offer the suitable flat-rates to make usage affordable. The small audience size phenomenon which is effective for most of the Pay-TV-offers is due to the fact that free TV is spoiled by commercials. None of the interactive trials, as documented below, was really a convincing success. There seem to be severe limits to dedicated communication, i.e. bottlenecks, which will slow down the whole process.

The implicit assumption that graphics and visualisation in dedicated systems may improve "interactive" involvement and understanding is dubious. The overdesign of html-pages slowed the Internet down to WorldWideWaiting. Some technical systems offer easier access to the inexperienced user, while others, like the multiple-choice-interfaces, are too inflexible to serve the sophisticated query of a specialist.

The surf on a new vogue of imagined communality

The path to a more dedicated communication is also dependent on the personality involved as the decision maker in the private home, as the early adopter or heavy user. The desire to demand more dedication may differ with the sex and age of the consumer: women tend to use the telephone if they want to enhance and to intensify their private life, whereas young men use the computer to surf on

"The clip culture of the very young is a necessary precondition towards experiencing the unguided surf through the Internet as entertaining."

a new vogue of imagined communality. Women have different concepts of dedication to men. Young people flee into their dedicated peer-group from the TV prison of their parents at home, whereas the older generation expect a dedicated media answer to the personal cocoon they spin around their private apartments.

There are different levels of dedication. Primarily dedication in media usage is related to content, but new communication environments may redefine the locality of usage as well. With mobile communication technologies I may get public space dedicated to my personal usage. If the technology will allow me to install my electronic neighbourhood (Rheingold 1994) into an alien environment then the new place will be less threatening and even better, the new place will remind me of being home.

Public space dedicated to personal usage

Dedicated communication is sceptical in relation to authorship. New media aesthetics in terms of hyperlinks and individual strategies of reception and perception will open the storytelling dimension of the traditional media. This erosion of the central dramaturgy has already begun with the aesthetics of the commercials and the opportunity to zap them away with the remote control. Zapping was the first step towards a more dedicated reception. It did not need new networks to foster a new type of successful fast food aesthetic, which had been prepared in Sesame Street and is now accepted public culture via channels like MTV. The clip culture of the very young is a necessary precondition towards experiencing the unguided surf through the Internet as entertaining.

Dedicated communication is sceptical in relation to authorship

Dedication may lead to a better orientation and at the same time its hype may also increase confusion. Surfing through in the Internet is very often a tiring experience of getting lost. The challenge to create new types of order in hypertext systems is not yet met.

The hype of dedication may increase confusion

The uncertainty of social systems is growing through a lack of stability in social institutions and related value systems. When the institutions and the localities they are built for don't match, dedicated systems deliver the necessary roots and the continuity to tie something to a virtual place where the past structure in "real" life does not exist anymore.

People prefer to live more and more "off-line". The individual structure of their daily life does not allow as many fixed points any more, which could be shared within a broader cultural context. People tend to or at least prefer to choose independently the time and moment when they get up, have breakfast, lunch or dinner, leave their home or go to bed. Their dedicated time schedule is the frame in which each new technology has to offer flexible solutions. This cultural trend to live off-line has no direct economical implications as long as people don't *need* technologies to fill the social gap of personal accessibility on-line. But the on-line world at first seems to just make life more expensive and demands prices which are still too high in relation to the enhancements which they intend to convey.

The trend to live off-line: Dedicated time schedules

Micropayments in Dedicated Systems

Micropayments – a way to soften buying decisions

Experts are still undecided if Pay TV or the Internet will be the key technology towards electronic interactivity in the private home. Pay TV seems to be a limited market in Europe for those people who are tired of getting their preferred programmes interrupted by commercials, or others who do not find their preferred products within the frame of free TV. As we should know, Pay TV will cost us additional money and the only way to relieve the pain is the strategy of splitting the bill into smaller payments. As the world of the new interactive media does not seem to be a basic need of the majority of the consumers, new types of marketing will pave the way and soften the buying decisions. Micropayments are necessary, because the selling of less necessary cultural goods is much more difficult than selling a car, for which people even save money in the long run to be capable of buying it.

Flat rates limit the risk of overdoing it

In the world of micropayments the biggest problem from the consumer's point-of-view is the fact that he may lose control over his spending and as many people are already in debt "up to the eyeballs" they may increase their borrowing in future as well over their heads to a degree which they cannot afford any more. Politicians should feel challenged to protect their fellow citizens from new technologies and to develop regulations to guarantee at least the transparency of the private budgets and they should insist on a system of tariffs in which flat rates may limit the risk of overdoing the costly usage of telecommunications. In a "promotional culture" (Wernick 1991) the system of free choice and equal opportunity should be matched by sensitive warning devices if the consumer is approaching his financial limits. Instead of transforming every sphere of life into real-time events in the networks of costly providers, there should be a new initiative for transparent real-time billing systems to keep the on-line world affordable. The misleading bias, that the new interactive media cannot be paid for by their consumers, is a dysfunctional obstacle for the developing multimedia industry.

Avoid waiting online: Let your agent do the walking

The amount of money which has to be spent for the usage of telecommunication systems increases sometimes dramatically, with the time spent on-line. To be socially "on-line" or accessible should no longer mean that you are technically and economically on-line. "Let your agent do the walking", and let him wait for you in line, is the idea behind new communication systems in which databits may represent your personal dedication. The problem is that the technological concept of going the next step from customisable systems to intelligent agents is a big challenge for man-machine interaction (Baecker 1996, p. 783 ff). The more the system will work for you to decrease on-line spendings the less you know what your system is really doing and finally you may end up in a world in which the agent will spend your money. The call-forwarding device for example is a beautiful tool for the service providers to print virtual money in the telecommunication networks.

If the general desire to communicate increases and if we will have to pay money to get our communication system running, then micropayments are an ideal instrument to hide the higher costs we have to pay. Growing dedication as well as "smaller" prices for a service online will make it easier to convince us to pay the bill. That will be another reason why new dedicated communication systems pretend to rely on more involvement and personalisation. An average desire to use a product is not good enough to keep micropayments flowing. The individual software, the individual movie, the individual call and the individual information will hook us on an expansion of opportunities to pay for them.

Dedication may be misused to keep micropayments flowing

The telephone was the first widespread social system, in which the micropayment system functioned very well. Our research on telephone usage in the private home has shown that the metaphor of the reasonably price conscious and selective consumer does not yet exist in the field of telecommunication. Micropayments tempt us to forget the final price we have to pay. The desirability of a single call and not the affordability of the accumulated monthly bill is the main control variable to decide upon placing it and even this seems to be rather reasonable.

Micropayments tempt us to forget the final price

If new dedicated communication is to be affordable there has to be a new approach to account for performances within the networks. Decentralised accounting systems, supported through portable chips, may give the control of dataflow back to the user. Anonymous accounting with public ombudsmen should guarantee the integrity of data in relation to the flow of money. These are a necessary precondition to make dedicated communication feasible. To keep control over the dataflow in dedicated communication systems there's nothing better for the moment than a chipcard with your choice at hand. The portable chip is the symbiotic answer to the necessary but harmful database which a dedicated communication world will need to adapt to your personal needs and to account through micropayments for "individual" and specific performances to make all this possible. But before you may customise the billing systems, you should know the complementary scenarios in which interactivity may generate new types of payments and you should know as well which of them will influence the other.

Keep control over the dataflow: the chipcard – your choice at hand

Scenarios of the Interactive Home

The evolution of interactivity has to be understood step by step (F&F: Table 1.4.3, p. 268). The access to the world of multimedia is related to the ownership of the necessary entrance tool (F&F: Tables 2.3.1.2-3, p. 280f. and 6.1.2-5, p. 302f.). There are eight strategic scenarios for home consumer environments to get involved and to gain ground in the realm of dedicated communication: the increase in quality scenario, the selective TV scenario, the CD-ROM scenario, the Internet scenario, the Web TV scenario, the value added services scenario, the home automation scenario and the virtual reality scenario.

Eight strategic scenarios for dedication in the private home

The "increase in quality scenario": good products sell for ever

The increase in quality scenario is by far the best bet for providers to survive in new media markets. "Good" audio-visual products will sell forever in whatever technological form they may come along. Even the most traditional media like a book will find their market if their subject is interesting enough or their style is superior. The dedicated user does not want to be restricted to a specific medium. As there is no inherent indicator of quality related to the symbolic means of a communication technology, the specific and inherent symbolic qualities of different media will enhance variety and the opportunities to select. The rhetorics of multimedia suggest that technology comes first but, as the successful artist or producer may argue with equanimity, each of the media will be keen to get him under contract.

The "selective TV-scenario": artificial access through the buyout of events

"Money makes the world go round" is the global approach for the selective TV-scenario. The selective usage started with the multiplication of TV channels and found its most active expression in the sale and rental of video cassettes, which for years has been a powerful market in Europe (F&F: Tables 7.2.3-4, p. 328f.). The only innovation of interactive TV towards more dedication is the nondisturbed reception of a programme commercial free, as video-on-demand and pay-per-view services are not yet available in most European countries under normal conditions. European Pay TV offers a bunch of selected highlights, which were previously available in "Free TV" for almost nothing. Pay TV is even more expensive than video rental or video purchase. The dedicated Pay-TV viewer may be an "early bird" served through his privileged step in the distribution chain of audio-visual products (F&F: Graph 5.8, p. 299). He gets attractive movies only some months after their first screening, but the access he gets in other fields is artificially created through the buyout of specific events. Until now there has been no real competition in Europe on this market till now and new providers will only survive if they have the opportunity to sell their products twice or even threefold.

The "CD-ROM-Scenario": a hybrid technology to bypass the limits of online selectivity

The CD-ROM scenario draws upon the streamlining process to manufacture a well-designed audio-visual fast food product. Usage is not continuous and drops dramatically when the customer gets accustomed to it. Whereas on the American market the stagnation of the CD-ROM is already visible and had been considered to be true in several of our expert interviews, the European scientific community at least expects a lot from CD-ROM productions. In the home consumer market the CD-ROM may function as a cheap archive or encyclopaedia, although there are not enough products adapted to the needs and the variety of national cultures in Europe. Considering the prices to conceptualise, to edit and to produce an acceptable product (F&F: Table 2.3.2.5, p. 283), the range of choice of such professional CD-ROM products will be limited for at least another decade and a CD-ROM will remain the most sophisticated and most expensive audio-visual product in the private home. The CD-ROM will not be capable of competing in sales with the book market for at least several years. The number of new books in print in Germany for example is 10 times as high as the whole number of CD titles available in the world. On the other hand, as the mere

"Within the realm of the Internet, the telecommunication providers play the role of the unmotivated slaves unwilling to open to their master the kingdom of success."

technical production costs for a single CD-ROM may decrease and the rewritable CD-ROM will occur on the consumer market, the CD-ROM may be the necessary hybrid technology to bypass the limits of on-line-distribution, especially in the field of special interest magazines. The CD-ROM in the long run cannot compete with TV in the field of entertainment as the half-life rate of interest demands a continuous renewal of arousal which the CD-ROM cannot submit. The higher price still strains the budget of the normal earner and the variety of choice on the shelves of the CD-ROMs in the private home will be less broad than the still rather limited choice of books in the normal home. The CD-ROM will remain a high-end product for sophisticated groups of consumers, but the speed of interactivity is convincing and in the world of encyclopaedia the logical power of hyperlinks is tremendous. In this respect the CD-ROM is far superior to the Internet world.

The Internet scenario actually seems to be overestimated in the USA and underestimated in Europe. The Internet penetration rate in Europe is still rather low (Goldhammer/Lange: Table 2, p.49) but the competition on the market for telephone services may ease Internet usage through lower on-line prices and flat rates. The on-line world of the Internet in comparison to the CD-ROM appears to be unlimited in relation to its capacity to store content, but the Internet is still too slow to get knowledge present off line. Traditionally the Scandinavian countries have a high penetration of telecommunication tools and Britain, together with the Netherlands, is at the vanguard of usage among the other European countries because of its lower rates for on-line services. The high penetration of the Internet in Switzerland is due to its usage in the commercial sector. France got stuck in Minitel which was ahead in private on-line usage some years ago and has fallen back now because Minitel took away the motivation to apply for a new Internet account. The leading technology of the Internet is the personal computer and the key application of the Internet is e-mail (F&F: Table 8.3.2.9, p. 346). The number of users is increasing at an incredible speed (F&F: Table 8.2.3, p. 335). E-mail enriches the opportunity to customise dedicated messages (Blum 1994) to underpin a trend from locally bound immediacy towards new types of directness independent of time and space (Lange 1989), and the widespread expectancy of new types of wired neighbourhoods are a legend (Dohany-Farina 1996). The news- and chat-groups are a new quality of community and their high acceptance and usage an indicator that dedicated communication has been neglected by the mass media in the past. Party-lines and dedicated calls on the telephone seem to be the equivalent of value added services in the later scenario. The European telecommunication system still reacts to those new types of usage as if we were still using the telephone switching system exclusively for the exchange of short messages. Within the realm of the Internet, the telecommunication providers play the role of the unmotivated slaves unwilling to open to their master the kingdom of success. In the whole of Europe (England excluded) on-line services are still priced too high and deliver their data much too slowly to

The "Internet-Scenario": overestimated in USA, underestimated in Europe

open mass consumer markets. If there weren't professional providers with an excellent customer service, most of the users would get lost in the WWW/Internet-jungle. The Internet is still too complicated and it takes a lot of time to learn to navigate. New services need new providers (the Internet is the best proof of that) because the traditional net providers cannot cope with the Internet system: they are too technology oriented and forget the importance of the human interface. Online Surfing will not eat up TV time yet (F&F: Table 8.3.1.6, p. 341), but the trend towards individual and collective Internet usage is a strong underpinning of the dedicated communication theory.

The "web-TV-scenario": the TV-tube as a one stop shop for the interactive world

The WebTV-scenario is a rather new vision which refers to the high acceptance of the TV set in less technology-oriented private homes and predicts that in the new mass market of Internet the access and content question has not yet been solved. Dedication could be sought by the WebTV in an open competition of information and entertainment tools. The one stop shop concept still relies on the less valid assumption that the tube in the living room is still the cultural centre of the private home, although this may vary within the different European countries. Most of the Settop-Boxes used in Europe are not really interactive and the forecast of "interactive TV-households" indicates a rather slow movement from "passive" TV to "active" TV (F&F: Table 7.2.5, p. 329). The WebTV concept may open a new mass market but it neglects the serious efforts of the most advanced computer users which you find in the group of people with higher income and higher education (F&F: Table 8.3.2.4, p. 343) to integrate their basis of knowledge and entertainment in sophisticated systems of storing, transforming and forwarding data. The dedicated dimension in this aspect of usage is the idea of actively dealing with data and success in mastering the handling and production of information.

The "value added services scenario": the personal access manager

The telephone is the key technology for the value added services scenario in which the volatile interrelation of people is brought to a new peak through the management of one's personal contacts. The telephone is obviously a less debated technology, in comparison to TV, with a less negative reputation at least among women. This may stem from an overestimation of the "active" nature of the telephone conversation on one side and on the other, from the high-brow cultural bias against the one-way-road of mass communication, for which TV is becoming a negative symbol. As the personal communication system diversifies, mediated interpersonal communication starts to compete with mass communication. In relation to *time spent* while using it, the TV and even the radio are still leading, but in relation to *money spent* in many modern European households the telephone together with other complementary interpersonal communication systems (fax, telephone answering machine, the mobile phone and the value added features of modern ISDN services) already exceeds mass media consumption. As the mediated interpersonal communication seems to be inherently dedicated, this adds to the general trend. If Europeans catch up with the regular usage of the telephone to order food, tickets or other services, to do homebanking or to substitute

mailorders (F&F: Table 7.2.3, p. 329), then the biggest market for interactivity could be the plain old telephone system with a traditional high volume of sales (F&F: Tables 9.1.2.3-4, p. 358). Conference calls and audio databases may further increase the usage of the telephone system and it is especially unclear yet if the videophone is only another value added service or even a powerful emerging and coherent *new* interactive scenario.

The videophone – a new interactive scenario?

As home communication technologies try to address the relation of the private to the outer world, the home automation scenario refers to the internal arrangement of convenience and the necessary tools for achieving a climate of comfort. Security services could be highly interactive systems and the monitoring of devices in a private home may demand more and more technological communication skills or, as a student of ours just put it: "Some people communicate most with their refrigerator". Personal convenience and dedicated comfort are essential goals in private life, next to being entertained or adequately informed. They are desires which should be considered and applied in constructing new interactive products. The early reservation of a ticket may ease a visit and makes the trip more comfortable. A reliable and regionally oriented dedicated weather forecast may just not only deliver good information, it's even a life convenience system, if you take your umbrella with you on your way to the subway station. Blurred anxiety may be the source and the cause of social isolation and a specific fear may demand a clearly dedicated interactive solution to avoid a handicap or dismaly. As the security paranoia is growing, interactive services offer dedicated solutions for personal levels of risk awareness. The public debate about the new opportunities of the multimedia age refers primarily to the wishes to get more and more amused or entertained. Those desires are somewhat hyped whereas the natural desire to live safely and conveniently is very often underestimated.

The "home automation scenario": new means to live safely and conveniently

Although the cyberworlds of the virtual reality scenario play an important role in multi-media literature there hasn't been any affordable solution for the private home besides some low budget and low performance videogames. The large TV-screen and not the ultramodern VR devices will revolutionise the esthetics of the private home. The virtual reality scenario is obviously the technologically most advanced high-end perspective of interactivity. Instead of watching electronic images you may start to play, to work and to live in new virtual environments. But those visions, actually presented in form of gimmicks and toys, are very difficult to conceptualise and cannot be changed or relaunched at least for several years at affordable prices. To be competitive and to reach a broader audience, virtual reality production would have to be more or less as cost-effective and productive as the traditional electronic media . The virtual world will need an on-line supply of new inputs, and the key application could still be the games world, which needs urgently new impulses (F&F: Tables 2.3.2.4-6, p. 282f.). Although the Internet will be too slow for the cyberworld, it could be the backbone of data which may be brought in to modify the digital Telenovelas. There seems to be no higher level of dedication in Cyberia (Rushkoff 1994) than to throw your whole body into such

The "virtual reality scenario": too real to be virtual?

a new communication world. But what about the enrichment of personal fantasies? The virtual reality may be too real to be virtual. The "physical" body movement and three-dimensional space crafts of the cyberworld may blow away the mental flirt with the surreal provoked by distant dreams and poetic visions. The future of virtual reality will rely on its capacity to cope with reality and normality. It should be possible to raise questions in virtual reality land and to get an acceptable answer instead of being "moved", overpowered by the hyper application of a multiple space idea. The techno myth behind the virtual reality scenario is an alienation of the introductory quality scenario. Dedication could be achieved with real virtuality as well as with virtual reality. A good story will survive and even conquer cyberspace. That is the reason why the old myths of Grimms fairy tales may be successfully relaunched in sophisticated high-tech products like the political correct bedtime stories on CD-ROM.

The multimedia-myth: hype without vision

Communication without dedication is like knowledge without inspiration

A myth is a myth is a myth. It is a classical subject, especially if the story the myth is telling could be purified and culturally verified through its usefulness in explaining the world or enhancing life by its entertaining dimension. In this respect, multimedia in the private home is no myth at all. It is very often hype without vision. Communication without dedication is like knowledge without inspiration. The rhetorics of multimedia should be confronted with and challenged by the protective inertia of reluctant daily life. There is no technological way to enhance dedication. What you still need to serve the needs of the modern devoted consumer is a capacity and a will to develop social fantasy and a reasonable amount of inspiring creativity.

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Policy Perspectives Summary

Regulation and Deregulation

The digital age opens a whole new range of conflicts for Europe's and indeed the world's policy-makers: between the need to regulate, and ensure that copyright is protected, and the need to disseminate information freely, for cultural or educational purposes. This section deals with Europe's current dilemmas in terms of regulation, and also examines whether Europe can learn from the example of regulators in Japan and the USA.

Richard Paterson explores the policy implications for Europe of the economic and cultural "value chains" emerging from the digitalisation of the audio-visual media and the untapped potential of the established media, such as cinema and public broadcasters' archives.

As is clear from existing European Union legislation and continuing subsidies for many industries, regulators and politicians are keen to intervene in the new information society. The outcome, however, remains uncertain. Richard Paterson warns that the divide between the information rich and information poor may become unsustainable unless new legislation takes into account the long-term needs of society. At stake is not only the competitiveness of Europe's media industries, but also whether the impact of the digital age is to be of benefit to Europe's citizens.

Any legislation must ensure the political, social and cultural rights associated with citizenship: focusing as much on "rights users" as "rights owners", while preventing individual European nations' cultures from being swamped, by American culture or the larger European cultures. No small task for Europe's leaders.

In view of this uncertainty over the future, European television companies are increasingly turning to new alliances, mergers and acquisitions. With the rules of engagement constantly changing (with telecom deregulation and the abolition of technical barriers between different sectors), new alliances offer a way of reducing or at least sharing the immense risks of seeking new markets for new products. Antonio Pilati and Guiseppe Richeri examine the impact of mergers such as that between the German media giant Bertelsmann's television branch and CLT, the Compagnie Luxembourgoise de Television.

Of equal interest to public service and private broadcasters is the policy issue of harmonising copyright and related rights in the EU's internal market, an issue not only of immense political and legal significance, but also of the utmost commercial importance.

Jens Gaster points out the difficulty that copyright currently represents, with much legislation difficult to enforce on a worldwide scale in the new information society. Currently, different traditions in national legislation have resulted in considerable discrepancies in the way intellectual property is protected in Europe alone: Jens Gaster examines in detail the steps the EU is taking to harmonise its laws. He also explores what needs to be achieved at a global level under the auspices of the World Intellectual Property Organisation.

However, if regulation is difficult at a global level, individual countries have their own problems. Hans Kleinsteuber and Marcel Rosenbach look at the example set by the USA, where the foundations of communication policy for the digital age were already being laid in the 1930s. Relaxed concentration rules, and a policy of competition in virtually all markets are ensuring a lively and thriving communications industry: can Germany, with its own unique and complex ways of regulating the media, hope to follow that example? The gloomy message is that without reform of public policy, the answer may be a resounding no.

Richard Paterson

Policy Implications of Economic and Cultural Value Chains

Richard Paterson

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"It is of concern to all that a society of knowledge, properly regulated, should be established which offers new entrepreneurial and employment opportunities across a range of industries by acting as a driver of new economic activity. Economic activity is becoming ever more dependent on the knowledge and the skills of the workforce. However, an examination of where economic value will be added needs to take account of the cultural, social and political consequences of these changes."

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Value Chains and Public Policies

As the age of digital reproduction emerges a new analytical framework is needed to understand the commercial and cultural changes which are underway. Digitisation of information and its availability through telecommunications networks brings with it as yet unknown and unforeseen consequences. Opportunities for innovative economic activity will emerge alongside new cultural values. It may become an age of empowerment in which access to information and the ability to create knowledge develops new levels of creativity. Enhanced cultural value may match the additional economic value deriving from new services provided in the information society. However, it is equally possible that the divide between the information rich and information poor will become unsustainable. It is of concern to all that a society of knowledge, properly regulated, should be established which offers new entrepreneurial and employment opportunities across a range of industries by acting as a driver of new economic activity. Economic activity is becoming ever more dependent on the knowledge and the skills of the workforce. However, an examination of where economic value will be added needs to take account of the cultural, social and political consequences of these changes. It is necessary to consider whether the virtual dimension of the new digital information world will have an impact on the understandings, identities and characteristics of individuals in society as well as offering better marketing tools for companies to utilise.

Enhanced cultural value may match the additional economic value deriving from new services

Recent debate within Europe has invoked the notion of the value chain to explore the process of convergence between the audio-visual and telecommunications industries. However, useful and instructive though the value chain is as an analytical tool, so far it has concentrated attention on economic value and has been insufficiently attuned to the impact of change and convergence on the public sphere and cultural value. We need to consider how convergence will affect cultural values and creativity: the domains relating to identity and to the conditions for wealth creation.[1]

At its simplest level industrial sectors concerned with value added services, and particularly the telecommunications sector, perceive entertainment as an attractive inducement for consumers to participate in new services. These new services, in this perspective, will sit alongside other information businesses whose core function is data collection and distribution. The future information services market, broadly defined, will encompass other areas as diverse as health care and transport information in its maturity, but while health or financial data exchange may be viewed neutrally, cultural exchange is seen, particularly by politicians, to pose threats to national "identity" and to the "integrity" of the political space. We need, therefore, to consider the appropriate regulatory response in the field of culture and the media.

1 The "value chain" is an analytical tool introduced by Michael Porter to explore how companies within industries identify sources of competitive advantage (Michael Porter, Competitive Advantage, New York: Free Press, 1985). Paul Romer's revision of endogenous growth theory has shown the importance of human capital for faster growth (Paul Romer, Endogenous Technological Change, in Journal of Political Economy, vol. 98 part 2, 1990, pp S71 – S102). Alongside activities adding economic value (which as Porter noted are supported by a context of skills, infrastructure and technological development) we need to assess the changing cultural values which are both inputs and outputs to the human capital required in the audio-visual industries. An amended version of Porter's basic value chain is shown below.

It is sometimes forgotten that decisions about programme content taken by companies in the media will have an impact not only on their profits, employment levels and the national balance of trade in audio-visual services, but on the enhancement (or abandonment) of "cultural" values. It is this bifurcated perspective which suggests the need to understand cultural value as both an input (through the deployment of the skills of the work force, themselves forged in education and training systems) and an output (in terms of the content created with its implicit values affecting individuals as both consumers and citizens).

Decisions about programme content have an impact on the enhancement (or abandonment) of "cultural" values

In short, in an age of digital reproduction we need to consider the impact of change in both the economic and cultural domains. We need to consider the changes in the economic value chain of the audio-visual industries and their effect on organisational structures and cultural outputs. The requirements of a new regulatory structure, which enhances economic activity but takes account of educational need and cultural output, need to be established. The changes in the Information Society need to be negotiated at every level. In so doing we need to move beyond economic considerations to understand the implications of the new market developments for individuals in their everyday lives and in their cultural experiences.

Convergent Industries and the Value Chain

The value chain is a model that describes a series of value adding activities connecting a company's supply side (raw materials, inbound logistics, and production processes) with its demand side (outbound logistics, marketing, and sales). It can also be applied to a whole industrial sector defining the various elements which underpin its functioning. In the audio-visual sector this includes every process which adds value: from the genesis of an idea to production, from distribution to consumption. When previously distinct industries converge there is inevitable change in the functioning of the economic value chains in each sector. For example, the changes in the value adding activities in the distribution of software over a telecommunications network are underpinned by the converging (and sometimes competing) interests of computer and telecommunications companies concerned to extract value from existing sectors of the cultural industries. In response existing sectors are forced to accommodate, adjust or change.

The value chain model can be applied on the company level as well as that of a whole industry

A key factor in the economy of the information society will be the provision of intelligent agents for value added services. There are five activities to create value from information: gathering, organising, selecting, synthesising and distributing. The value chain associated with service provision over networks will become closely tied to the industries of cultural production. The recent link between the BBC and ICL/Fujitsu in the UK is one example of a move by a computer hardware company downstream into content provision.[2]

Information is no longer a supporting element of the value-adding process but a source of value itself. In the information world the final value-adding step –

2 Downstream activities are those which follow the current value adding activity; conversely upstream activities precede the current activity. So, in the audio-visual industries production of programming is upstream, exhibition is downstream.

"Regulators and politicians want to be seen to act in both the economic and the cultural domains, but the consequences of their actions are uncertain."

the navigation – is "virtual" in that it is performed through and with information. Value is added from information gathered in the marketplace. The potential attributed to market intelligence from subscription management systems as a source of value suggests new opportunities in many service industries. The company holding information becomes a new locus for value creation. This is a new type of value creation which mirrors, and potentially enhances, the economic value chain, as it is based on information about the "values" and cultural identity of each individual consumer. This new dimension of the value-adding processes poses new conceptual challenges for analysis of media markets.

The company holding information becomes a new locus for value creation

It is into this world that regulators and politicians increasingly wish to intervene. They want to be seen to act in both the economic and the cultural domains, but the consequences of their actions are uncertain. Furthermore, their actions are susceptible to lobbying by interested commercial parties and other interest groups. A current preoccupation is the control of cyberporn on the Internet, but the central questions at issue in the audio-visual field are much more fundamental. They concern a new relationship between the economic and cultural in the future of developed societies.

Public Policy Issues

The debate over intellectual property rights – in the US and in Europe – encapsulates the scale and significance of the problem. While copyright protection is fundamentally about rewarding originators for the exploitation of their intellectual labour it can be (and is being) used to prevent trade. The wider debate around the EU Green Paper on Copyright in the Information Society and in regard to the Lehmann Report in the US, has shown the range of conflicting interests in European and American society.[3] There is an attempt to impose a limitation on educational use. The market in relation to education is seen as valuable and exploitable. However, this is contradicted by an assessment of the longer term needs of society and the industrial or political consequences of restrictions in the use of intellectual property assets. The questions and issues and the informing discourses surrounding new legislation on intellectual property rights or any new regulatory structures have to be considered in terms of the different interests, public and commercial. Which underlying rationales are on offer? Are the consequences understood? In relation to any future laws in the digital age, whose interests are being served?

Education is seen as a valuable and exploitable market

Furthermore, there is the question about how much regulation is needed and for what purpose? Questions of trade, economic performance, cultural identity, social responsibility all become relevant.

Public policy in regard to the utilisation of any educational or cultural additionality deriving from audio-visual output is an important issue. What are the conditions which allow a culture and society (and economy) to flourish? Ask Microsoft or Apple and they will identify free flow of information (within their

3 United States Information Infrastructure Task Force Working Group on Intellectual Property Rights, Intellectual Property and the National Information Infrastructure: the Report of the Working Group on Intellectual Property Rights, Bruce A. Lehman, Chair, September 1995; Commission of the European Communities, Copyright and Related Rights in the Information Society (Green Paper), COM (95) 382 final, July 1995

companies) as key drivers. Is it any different for society tout court? Equally important are public policy interventions in infrastructural measures whether through the funding of training or the establishment of beneficial fiscal regimes. And all these factors have to be considered within a political context which includes the anxieties about balance of trade and loss of cultural identity.

Culture and the values associated with it will continue to be debated in political discourse. Politicians will seek to allay fears (perennially about the "effect" of different media, occasionally about threats to "identity") as well as set positive outcomes from media provision which they expect regulators to sustain. The current regulatory paraphernalia includes controls on content or origin, rules on ownership, and quota percentages (in Europe) of European production. These rules have often been formulated to answer the problem which arises when cultural objectives are in conflict with the commercial ends pursued. In the digital age a range of new problems has to be addressed. In particular the possible irrelevance of regulation when there is a global availability of material which cannot be controlled locally.

Current regulatory paraphernalia: content, origin, ownership, and quota percentages

Cultural value is an output measure which includes issues of quality and representations of the cultural diversity of a nation, people or region. A reconceptualisation of culture in the digital age of reproduction needs to address a range of new problems: the origin of the cultural product; the "virtual domain" of information about audiences; and a much more complex characterisation of the population "consuming" the output. It needs also to examine input measures as various as the characteristics of creative "labour" and the availability of educational resources for cultural work, and output measures based on the content produced on the economic value chain.

Cultural value includes quality and representation of the cultural diversity of a nation, people or region

However, cultural value has a different valency in different countries. The exclusion of audio-visual services from the final agreement in the GATT negotiations was based on variable cultural policies across the globe which did not correspond with the more established politics of trade.[4] As negotiations moved away from trade in goods to trade in services there was a need for an analytical framework considering "cultural value" as an interface with economic value creation. Culture has an economic value; content produced in an economic infrastructure has a cultural value; there is not a simple binary opposition and the complexities and interrelationship of the different values need to be understood.

The approach here begins to establish a framework of analysis based on the concept of "value chains" and economic theories of endogenous growth in order to provide a greater clarity of approach in public policy discussions and initiatives.

The Changing and Differentiated Value Chain

Different companies will supply different value adding activities along the value chain of the audio-visual industry. The profit margin at each stage is variable; dependent on many factors including the degree of competition, first mover

4 See, for example, John Croome, Reshaping the World Trading System: A history of the Uruguay Round, WTO, 1995 p. 358 ff for a description of the negotiations in GATS in late 1993 in relation to cultural matters and particularly the "special nature of audiovisual services"; and Toby Miller 'National Policy and the Traded Image' in P. Drummond, R. Paterson and J. Willis, National Identity and Europe: The Television Revolution, BFI, 1993 for an analysis of the new terms of debate about trade with the increased importance of trade in services.

The profit margin at each stage of the value chain depends on the degree of competition

advantage and the impact of technological and organisational change. Analysis of the future competitive situation in the supply of services attributes different margins to activities, and forms the basis for future strategies within firms. In exploring specific value chains in different parts of the audio-visual sector it is possible to identify the current profit margins (and added value) at each stage of the process – although this is an area of current uncertainty and certainly a recent report found difficulty in establishing accurate figures.[5]

In a world of enterprise where information and intellectual property are perceived as central to future prosperity it is not difficult to understand the anxiety of firms in the media industries devising strategies to maximise their return on investment in the information society.

These changes are occurring because there are areas of high potential income emerging downstream in the audio-visual field. With new technologies of transmission, and new intelligence gathering potential when consumers use services offered on these networks, additional market opportunities are emerging. A range of new income streams has been developed for films in the last 50 years. The same product is now available successively in cinemas, on video, on television etc. This model of multiple markets is seen to be further extendable to other "cultural products" including games and information. Rights in cultural assets are now seen as pivotal for future services. Investment in intellectual property rights has become paramount.

Film remains a very high risk investment

Film remains a very high risk investment but there are many other activities in the audio-visual industries which have both less risk and greater predictability in their demand pattern. An example would be TV programme production where the income is smaller due to more restricted markets but more certain over longer periods. Now new value added services are envisaged using network technology but with uncertain consumer acceptance, market penetration, or return on investment. In the contemporary audio-visual economy new vistas have been opened up by the prospect of a digital economy using networks for distribution. Digital assets are not used up in their consumption, so that economies of scale can be achieved by small companies, and transaction costs are lower for trading digitally than in the exchange of analogue materials.

Value added services deriving from intellectual property and using telecommunications networks for distribution are seen to offer new income streams for businesses to develop. However, their economic properties and market potential are little understood. As the International Publishers Copyright Council has noted, "what new technologies bring is seldom what the first technologists intended ... the phonogram was invented as an oral record for businessmen ... the telephone was intended as a device to listen to concerts".[6]

Behind the hype there is clearly some reality: what was once ephemeral has become valued and potentially usable as a commodity; archives which were once

5 KPMG, Public Policy Issue Arising from Telecommunications and Audiovisual Convergence, Main Report, London: KPMG and European Commission, 1996, p. 21

6 'Response of IFPI (International Federation of the Phonographic Industry) to DG-XV Questionnaire on Intellectual Property and the "Information Superhighway"' in European Commission, Replies from Interested Parties On 'Copyright and Neighbouring Rights in the Information Society' 1994, p. 269

seen as fusty and unnecessary are now viewed as a storehouse of immense value ready to be exploited. What had previously been seen as public goods have become commodities to be traded.

Archives are now viewed as a storehouse of immense value

It is important too to ensure continued production of intellectual property assets. There needs to be a flow of new software, and it must be protected from piracy. However, the danger in developing new strategies to address the changed business environment is that the cultural dimension will be overlooked. Regulatory codes need to be liberal enough to encourage investment, policed to ensure copyright protection, but open enough to support the continuation of cultural diversity and creative autonomy.

The Digitisation Effect: Industry Strategies

Broadcasting

For many years television had a well established value chain. The creation of the gateway service provider and the new business of subscriber management has already begun to shift the locus of power on the value chain. In the near future both content creation and distribution may undergo further change in their value adding potential, as digital technology contributes to an ongoing restructuring across the industry.

For the television sector the current value chain can be broken down as follows:[7]

The television value chain

In the European audio-visual space the position of the public service broadcasters will be further undermined as the new system of digital distribution evolves. The current income of public sector broadcasters is based on licence fees and advertising revenue. However, this will be ever less sufficient to purchase the best talent and the best programmes in the face of the increasing financial power of purely commercial subscription services. A response and future strategy is therefore urgently required which accommodates both economic and cultural concerns.

Plotting the new terrain of business opportunities and identifying future investment strategy is now a priority. Working out where value (both economic and cultural) is added, and what might be the technological, cultural and political determinants of future value adding activities is an urgent necessity in the public sector broadcasters, given their additional cultural responsibilities.

With the industry in flux and the spectre of convergent businesses – and in particular the telecommunication companies – exerting a new interest, decisions are necessary in the private sector, too. An examination of future growth (and

7 This is taken from Mark Oliver, The Broadcasting Market to 2005, mimeo, London: BBC, 1995; see also KPMG op. cit. for various permutations of the value chain in the convergent industries.

"An examination of future growth (and competition) in different parts of the economic value chain can clarify which areas require active engagement and which can be abandoned to other suppliers."

Social and cultural responsibility apply to all firms operating within the market

competition) in different parts of the economic value chain begins to clarify which areas in a business require active engagement and which can be abandoned to other suppliers. However, social and cultural responsibility apply to all firms operating within the market. Whether this should mean minimum regulation for cultural purposes (as effectively already happens with subsidies to film production in many European states) or allowing deregulation to the maximum extent possible (KPMG 1996, p. 235) remains a major issue for debate.

If television has been the first cultural industry affected directly by the digital revolution (financial services preceded it), what do the telecommunications companies seek to achieve? The telecommunications giants ostensibly wish to enhance the use of their networks into which substantial investments have been sunk. The telecommunications companies – when acting as utilities – derive their revenues through carrying services provided by other companies or from consumers who effectively lease bandwidth to conduct an exchange transaction. However, competition in the telecommunications market is driving down costs and many predict a scenario in which telcos will cease to be as profitable when they are unable to sell signal carriage for much above its marginal price.

The key to future profitability for the telecommunications companies will then become ownership or participation in value added services. We have seen video on demand trials by the telcos across the world to gauge the revenue potential of such developments with a range of services including home shopping, games and home banking alongside films for rent. However, following varied results from these trials the situation remains unclear and the telcos are continuing to look at other ways of deploying bandwidth – from improved Internet access for individual consumers through to film distribution to cinemas.

Successful intervention or participation of telcos in content-oriented businesses will destabilise existing relationships across the value chain

In terms of the value chain the successful intervention or participation of telcos in these value adding businesses will destabilise existing relationships across the value chain. That this might have a series of cultural effects is an important consideration. Destabilisation of the economic value chain could have consequences in a number of areas of cultural production, including the cinema.

Cinema Industry

Cinema is an area which has not been much considered so far in the digital age despite the centrality of film to many of the plans being made by the telcos for new value added services. The cinema industry offers an important historical case study in the operation and evolution of an economic value chain in the "software" industry. In its hundred years existence the basic mechanical technology which underpins cinema exhibition and the analogue form of film distribution has remained unchanged. The industry managed eventually to achieve an accommodation with the electronic transmission of films on television. It is now again facing a new, and perhaps even more difficult challenge with the prospect of both digital distribution (and production) of films.

The income stream of film in recent years has become much longer – in terms of sites for extracting rents and in terms of the economic life of the film. These are often referred to as windows.

The income stream of film

Historically the income stream has been added to incrementally, but none of the changes in consumption modes has fundamentally altered the nature of the film production sector. There has been product enhancement – whether bigger screen ratios or improved cinema facilities – but no revolution in the supply chain. Film is often a very high cost, high risk investment but it has a potential for huge returns on that investment when successful, particularly if distributed as part of a slate of films.

What is of increasing importance for analysis, however, is the possible impact of the digital delivery of films to cinemas, whether worldwide, regionally or nationally. In this situation the release of a film could be simultaneous via satellite or cable to any number of cinemas. The physical print – subject to scratching and dirt – would not be an obstacle to the quality of presentation. Each cinema would be able to present a perfect copy and smaller cinemas would gain access to current releases sooner and benefit from the advertising campaign on initial release. Smaller films might also benefit from a reduced cost of distribution.

The current power of the Hollywood majors will be challenged

A different set of industry players might emerge able to offset the current power of the Hollywood majors. The barriers to entry might be reduced – or at least a different set of barriers to entry would emerge. The economic value chain for the industry, and particularly current distribution arrangements and relationships between different firms, may become skewed if digital distribution takes hold. Such conjecture allows an interesting set of hypotheses about the future role of Europe's national film industries in developing cultural value and notions of identity in the digital age.

As previously identified by many analyses, including the DG.X Think Tank chaired in 1993/4 by Vasconcelos,[8] control of distribution is a significant key to the power of the US majors in the global audio-visual market. The financial strength of the Hollywood majors which allows large investments in new films (and thus the cultural values which their content offers) is predicated on dominance in global distribution. In many European markets more than 90% of cinema ticket sales are for US films.

Companies will have to make decisions about investments both upstream and downstream, and the existence of new domains of distribution alongside new modes of production may have a displacement effect between firms. In the new age of convergence we may see new players accruing considerable influence across the whole audio-visual value chain and particularly in the funding of new film production.

8 Antonio-Pedro Vasconcelos (chair), Report by the Think Tank, Brussels: CEC, DG.X, March 1994

Learning from the Paramount decree in 1948?

Such changes might be as revolutionary as those which beset the US film industry following the Paramount decree in 1948. It is instructive to see if there is any way we can learn about the changing relationships of firms from that history. The value chain for the cinema industry (production, distribution, exhibition) had been abused in the United States through anti-competitive practices such as block bookings, binding etc. Introducing competition and forbidding uncompetitive practices led to a healthier industry at both exhibition and production levels – the decrees led to divorcement of theatres and radical changes in relationships along the value chain.

Subsequently the Hollywood production and distribution industry has been the subject of frequent changes of control involving conglomerates as various as Gulf and Western or Coca Cola and in more recent times SONY, Matsushita and Seagram's. However the characteristics of the companies owning the stock has been almost irrelevant. The dominance of global distribution has been sustained and wider income streams added for film product. Increased profitability alongside an evolving organisational structure of the industry has led to a recalculation of the value added (and the rent extracted) at each stage in the chain. The organisation of production has changed with many independent producers attached in different ways to the studios. The key factor then becomes the optimum conditions for creativity set against the most cost effective mode of production. At the same time there have been other adjustments such as the rising influence of artists' agents in packaging films, or new rules for the re-use of an intellectual property right in wholly new markets.

Regulatory changes can loosen established organisational links

The evidence shows that technological or regulatory changes can loosen established organisational links and invigorate the processes adding value at different points in the supply chain. However, it is noteworthy that at each stage of evolution of the market for film there appears to be some fear of the power of the market. So, for example, the recent advent of the DVD (Digital Video Disc) has led to a determination by the Hollywood majors to protect software from global sale by using a different encoding standard in different territories. The impact of new entrants will be met with defensiveness.

And there will be a number of other consequences in the film business as digital techniques of production supplant earlier modes. The film production business has been transformed by recent technological innovations with effects both on aesthetic style and in the economics of production. It has also been accompanied by a need for new skills amongst the workforce. These are the key inputs in the creation of innovative films. New technological capabilities and network technologies may also have an effect on the character of production as it becomes possible to redesign internal and external processes in production to improve efficiency and effectiveness.[9] We live in an age of digital reproduction in which new relationships between organisations will emerge and alter markets. At

9 Much recent debate in the Harvard Business Review has focused on these questions e. g. Jeffrey F. Rayport and John J. Sviokla 'Exploiting the Virtual Value Chain', Harvard Business Review, November-December 1995. For an example of the early manifestations of these changes in the production of advertisements, where the agency and the production studio are respectively in the UK and Australia, see A. Chandler, E. Baker, T. Fisher and R. Moss 'Moving Pictures: A case study of the Videofax and Film Production', mimeo, University of Technology, Sydney, 1996

"With the long predicted convergence comes the need to reposition – to reconsider and to identify future high value areas."

the same time we can expect the cultural value carried by the products to alter while the propensity of users to consume will also change.

Digital reproduction will alter markets

Firm Strategies

The foregoing analysis illustrates the dynamic market conditions within which individual firms are operating. Many companies are beginning to consider their future options. Value creation in many parts of the media industries has undergone considerable change in recent years and is likely to continue to do so in the future. With the long predicted convergence comes the need to reposition – to reconsider and to identify future high value areas. So for the telcos if distributing other carriers' signals creates insufficient profit, then the key future profit driver has to be the value derived from services offered on the network. For production companies the changes in the value chain might lead to additional commissioning and financing from new entrants in the field of distribution.

The BBC's future strategy

In the UK, the BBC's overall future strategy is based on an analysis of the profitable areas of activities which it feels it needs to inhabit in order to transform itself into both an efficient global player able to produce and sell programmes, while also able to continue to play a public role in its own society. The examination of the predicted high economic value activities along the chain has led to the recent fundamental restructuring of the organisation. Resources becomes a separate business unit while programme production is divorced from broadcasting and commissioning. New joint ventures with commercial partners are planned using digital distribution while a high priority remains the ownership of intellectual property rights in programming. Granada Television has adopted a different strategy and has identified low cost production and diversified distribution as its means to seek added shareholder value in the audio-visual sector business, while eschewing global expansion (for now).

This can be seen as an industry breakpoint: each company across convergent industries will have to make sure that its offering to the market is, and will continue to be, superior in terms of customer value and delivered cost. A new business system may be required to deliver it. In such situations "the new offering typically causes a sharp shift in the industry's growth rate while the competitive response to the new business system results in a dramatic realignment of market shares".[10] Companies will be made and broken on the ability to adapt to, or exploit, the rapidly changing environment.

For many companies the best safeguard and guarantee against being caught out at this industry breakpoint seems to be a reliance on strategic partnerships. Sometimes these are forced on companies by their need to gain rapid entry to overseas markets; for example, BT in European territories; sometimes they are stake building in national territories; in other cases they are straightforward risk sharing because of the massive uncertainties which companies face.

10 Paul Strebel 'Creating Industry Breakpoints: Changing the Rules of the Game in Long Range Planning' vol. 28 no. 2, April 1995

Cross sector alliances seeking maximum flexibility and strength in the increasingly global market

There has been a range of alliances announced in recent years. Some of the most interesting examples, including BT/MCI/News International, BT/Mediaset/Albacom, News International/Kirch, BBC/Flextech(TCI), Canal Plus/NetHold, Cegetel (CGE, SBC, BT, Vodafone), indicate cross sector groupings involving software and telecommunications/cable companies seeking maximum flexibility and strength in the increasingly global market.

Put simply each of these alliances (putative or real) and many others can be analysed from the same principles: assessing risks and opportunities on the economic value chain, seeking maximum added value in new spheres relating to network distribution, and minimising uncertainty. For many it is unclear which is the optimum strategy to adopt.

The belief in the global orientation of network distribution has become accepted wisdom. It assumes economies of scale and scope. It assumes acceptance of product in all markets with the minimum of tailoring. It does not take account of cultural diversity nor of the needs and expectations of users of new services. It is the model of the American film industry – geared to a global market; not of the television industry – geared to the national market; it envisages global distribution (via telecommunications networks) to address audiences and customers. However, globalisation and its consequences must remain an element of uncertainty for firms as the value matrix draws together culture and economic effects more closely.

Commentators and industry analysts have often been proved wrong in the past. When the MPAA resisted first the sale of films to television and later the sale and rental of video copies they misunderstood the interdependent functioning of each segment of the market. As noted above, audio-visual product, and films in particular, now have a much longer income stream which is to a large extent dependent on the high visibility and review achieved on theatrical release. The function of cinemas in the industry and in the culture of consumption has thus changed.

Lessons from the music industry

The music industry is an important point of further comparison in any analysis. It is an industry in which European companies have implemented successful globalising strategies, but which has been able to increase its profitability through sublicensing of intellectual property rights. The relative ease in the trading of rights in the music industry compares with restrictive terms in the motion picture business. In the music industry there are multiple income streams reinforcing each other. However it is perhaps important to note the relative simplicity of the music industry in its current distributive mode – through radio and discs – and to consider the defensiveness displayed by the industry about the impact of Internet distribution of its material.

This analysis suggests that new opportunities are emerging, and that investment, both in capital and human resources, is urgent if uncertain in rate of return.

"A society with a strong cultural infrastructure will support the creation of new economic value."

New service providers have emerged in the financial information sector and it is very likely that this will be replicated in the audio-visual sector – establishing new relationships with content creators and content owners – offering database management, search engines, electronic programme guides.

Opportunities in new relationships with content creators and content owners offering database management, search engines, electronic programme guides

There will be other new businesses – niche opportunities in the value chain – rights clearance, sales agents – which will have an effect on current players. The nature of these businesses is likely to lead to start up small and medium sized enterprises (SMEs) in the first phase of convergence as specialisms become valued by conglomerates, leading in time to new arrangements of functions within companies as they redefine their core businesses. Whether vertical integration remains an organisational solution for larger companies is dependent on numerous calculations. All these factors will have consequences for firm structures and alliances between companies across the value chain.

The Digitisation Effect: Cultural

Walter Benjamin wrote in the 1930s about the changing perceptions of the world offered to individuals in an age of mechanical reproduction inherent in the very technique of film production.[11] He also noted how the introduction of sound to film production brought the masses into the theatres but also merged new capital from the electrical industry with that of the film industry, internationalising film production. The convergence now is as dramatic economically and culturally as it was in the early 1930s. New art forms and new modes of consumption are emerging. If it is in the home that most changes will occur – or where most resistance to change is apparent – then we need to consider more closely the demand side drivers of the industry. Which services will users want and how will they use them in their personal (and working) lives? It is possible to suggest a need to understand these changes in the new digital media culture by extending the framework introduced by Benjamin who noted the changed perceptions of the world allowed by film. It will be necessary to consider how material is produced, and then consumed and understood by audiences. As endogenous growth theory shows, there is also an important economic dimension. A society with a strong cultural infrastructure will support the creation of new economic value.[12]

Considering the demand side drivers of the industry

Cultural Value

The notion of cultural value allows us to examine the creative processes across the economic value chain of the media industries. As the economic organisation of production and distribution changes this has a "cultural" effect at each stage. Understanding the conditions for creativity is a paramount concern for governments concerned to retain a degree of cultural autonomy.

11 Walter Benjamin, Illuminations, Jonathan Cape 1970 (Frankfurt: Suhrkamp Verlag, 1955) p. 246
12 Romer, op. cit.

"Understanding the conditions for creativity is a paramount concern for governments concerned to retain a degree of cultural autonomy."

In material terms cultural value can be seen to be a factor at a series of levels:

Input Factors		Effects in Term of				Leading to Output/Content
Labour (skills)	Creativity	Consumption	Idea Effects	"Understanding"	Cultural Additionality	Films, Television Programmes, etc.

Consumption and citizenship reflect the commercial and the public sphere

The outputs of cultural value register in two overlapping dimensions – a commercial and a public sphere – oriented to consumption and citizenship respectively. The inputs to the production process, the creativity and work skills needed to produce cultural objects, translate directly across to the economic value chain. Education and training act as the linking value functions across both input and output articulated through production.

We need to map together both levels – the economic and the cultural – in order to facilitate policy decisions and to inform the strategies of governments wishing to consider appropriate regulatory structures. Governments wish to ensure the best service to their populations while securing an appropriate level of return on investment for investors. The economic value chain will always be dependent on cultural inputs at every stage from a skilled workforce, while new cultural value is continually created through the economic processes of production. The media industry will operate through the filter of a regulatory structure in the wider economy. Regulations create the conditions for the world of business and as a consequence for the world of cultural creativity.

Goods previously considered as public goods can be charged for

However, the age of digital reproduction changes the market for cultural goods. In both the distribution and retail of cultural goods the emergence of network industries affects the relationships on the value chain. Global delivery becomes possible alongside more intrusive market information about consumers. Goods previously considered as public goods can be charged for. In the workplace the conditions of work are changed and organisational structures redesigned. Regulation for a digital age needs to redefine its purview. Should educational use be seen as part of a market, or should we ensure a freely available set of services based on cultural products to secure a skilled workforce able to create effectively in future? Optimistically, the power of the consumer and the strength of the demands of the public as citizens might lead to a society of knowledge.

Distribution and Content

Distributing audio-visual material has been and will remain a key business area. The power of the distributor in the film industry and of the broadcaster in television is considerable. It has both economic and cultural effect. The potential value that will be added or extracted as rents in a new distribution nexus remains unknown. The use of intelligent agents to add a valuable service and induce the consumer to purchase more services will complicate the situation further.

The new networks based on an expanding telecommunications infrastructure create the possibility of global markets with characteristics which will undermine incumbent firms in other "convergent" sectors. Jack Valenti feared, indeed impaired the spread of the VCR (wrongly in terms of the interests of the Hollywood majors who now take a higher proportion of their income from video sales than the theatrical box office), but it was an understandable fear of loss of control. Now the new muscle of distributed networks may alter the focus of the telcos. Rather than simply acting as utilities, and with the control of distribution, they could gain the power to define content.

The telcos could gain the power to define content

However, though the biggest profits may derive from distribution, content is the key to ongoing profitability across all sectors of the business. Content is where culture most obviously meets commerce and in the audio-visual sector is an area of trading in which Europe is weak. Historically the financing of audio-visual content has derived from the investment by companies with distribution networks, often in integrated enterprises.

Financing and producing "content" is related to the ownership of the intellectual property rights in the asset. In many European countries there is a protectiveness of the distinctiveness of cultural difference and subsidies are provided for cultural goods. However most justifications for these programmes of support have been philosophical or political rather than economic.

The cultural impact of different media forms is an ever present issue but always has to be considered alongside the economic conditions of production and distribution. Walter Benjamin wrote about the democratising force of the analogue moving image in the 1930s (indeed the fear of this was the reason for UK government seeking to abate the influence of US film amongst the British working classes and the colonial subjects of the Empire[13]). The pressing political question today concerns the cultural power of the image and information in an age of digital reproduction – a digital cultural value – with possibly far-reaching consequences. Information and cultural works have both a new educational and economic importance (and power) in the digital age; they become a contributor to competitive advantage and a source of wealth in themselves.

Information and cultural works become a contributor to competitive advantage and a source of wealth in themselves

Culture is about content and its production and dissemination, whether it is music, film or any other form. As the IFPI noted in its response to DG.XV's questionnaire on copyright law, "Intellectual Property Rights secure for creators, publishers, broadcasters, performers and producers the ability to authorize or prohibit the public use of their creations in commercially significant ways. These rights secure an economic core which must be large enough to generate incentives to creation and dissemination, and to permit increasing investments in creative labour and entrepreneurship" (IFPI 1994, p. 269).

13 Ian Jarvie, Hollywood's Overseas Campaign: The North Atlantic Movie Trade, 1920-1950, Cambridge: Cambridge University Press, 1992

Governments have to determine who should benefit, and to what extent, from intellectual property rights: the copyright owner or the society which provided the wherewithal for the production of the work.

The important equation in the digital age concerns the relationship between organisational form (to finance and facilitate production), employment (to realise the creative endeavours of a skilled workforce), dissemination (through global networks), citizens' rights (in terms of access to information), and copyright protection.

The enhanced value chain

Enhanced Value Chain					
Cultural Value	As Input	Output	Diversity and Range	Choice and Affordability	As Output "Educated" Population
Value Chain	Ideas/Rights/ Talent	Production	Distribution	Gateway	Consumer Interface (Exhibition)
Key Factors	Low Entry Barriers	Dominance of Financially Powerful Companies	Ownership of Rights	High Barriers to Entry	Changing "Value" of Product (Digital Disruption)
Policy Input	Impact of Education/ Training Provision	Imperfect Competition in Global Markets	New Technics Regulatory Framework	Rules to Control Imperfect Competition	Control of Access to Minors

Regulatory Responses

What is at stake for governments in Europe is both the competitiveness of media industries and the cultural integrity and expressiveness of the peoples of the regions and nations. The twofold response to regulation canvassed in the recent report to DG.XIII (KPMG 1996, op. cit.) – to enhance economic efficiency and the public interest with an emphasis on liberalisation of markets – offers a sensible first step. Regulatory structures are justified but their scope has to be carefully considered. Powers might include the prevention of undue concentrations of power in these new spheres of activity.

Any new regulatory framework invites competing interest groups

Inevitably, whenever a new regulatory framework is proposed competing interest groups come to the fore. On the one hand, responses received by the European Commission to its questionnaire on the protection of intellectual property rights in the information society indicated the range of firms' anxieties about future market prospects in a digital environment. On the other hand, there are marked differences of emphasis about future strategy in regard to the information society between the European Commission's various Directorates-General. Directives and analyses emerging from within the European Union show the influence of competing claims for priority.

"The main source of value creation in the information industries is the intellectual capabilities of the workforce."

Interests use the rhetorics of commercial advantage and cultural guardianship variously to seek their objectives. This situation is predictable in situations of complex industrial change. As noted in the US at the time of telecommunications liberalisation: "The outcome of specific regulatory proceedings are shaped by the interaction of various players' strategies and relative political influence, as constrained by the formal and informal rules governing activities in the relevant jurisdiction".

A New Regulatory Agenda

A new regulatory agenda in Europe for the convergent industries needs to establish clear priorities along both the cultural-political and the economic axes. Countries need to sustain innovation. The main source of value creation in the information industries is the intellectual capabilities of the workforce. As economists predict, it follows that the economies with a larger stock of human capital will experience faster growth. Technological innovation has to be afforded priority. At the same time it is widely agreed that barriers to trade will slow down technological growth. It becomes imperative that the regulatory framework in Europe enables adequate access to knowledge to build human capital, while allowing open market access to non-EU companies. Europe cannot be a laggard in the area of information service or media innovation.

Adequate access to knowledge is imperative to build human capital

Innovation and creativity in cultural production interweave economic and creative inputs. The skillsbase needs to be maintained and continually retrained across all functions in the labour market, encouraged as appropriate by fiscal or other measures. The market conditions need to provide for organisational innovation as well as offering sufficient protection from dominant operators in the various market sectors.

In the digital age of reproduction regulation needs to adjust to the paradox of cultural specificity and diversity in production, alongside the globalisation of distribution. Firm strategies need to be given a clear framework within which investment decisions can be made and a levelling of the "playing field" against other countries and blocs to ensure a fully competitive market.

Regulation must create a clear framework within which investment decisions can be made and secure a levelling of the "playing field" against other countries

Concluding Remarks

Media companies articulate their position within a set of understandings about the economic value chain, and variously inhabit a "national" or a "global" space relating to current and future markets. They take into account the "cultural" dimension to the extent that it serves their own commercial end or is imposed upon them in some way by regulation. Organisations in the public sector are more likely to be constrained by the national market and the need to be in harmony with national cultural ideals, indeed to be the fount of their expression. Cultural value is then a feature across both sectors but weighted differently in each case.

Those with an interest in creating regulations – effectively the politicians and government agencies – seek to enhance the cultural and economic dimensions in the audio-visual sector but without usually considering their relationship. The rhetoric can be both defensive and aggressive.[14] Current changes in the industry are likely to amplify an unhelpful cultural rhetoric. But in the digital age, convergence and competition could bring additional profitability and vitality across all sectors leading to improved cultural representation. Whether there will be effective competition for the Hollywood majors in global markets remains open to question and dependent on the strategies of new entrants from different sectors.

Subsidy creates a negative ambience in a dynamic sector

The response of the European Commission to date has been inadequate, not because the analysis informing decisions is always wrong but because subsidy creates a negative ambience in a dynamic sector. There are important consumer needs which do suggest a role for EU engagement – but they are at a different level relating to the privileges of citizenship and the development of a skilled workforce rather than the featherbedding of uncompetitive industries.

The organisation of value adding activities within the audio-visual industries is changing with technological innovation. The relationship of networking to questions of organisational form and dispersal and the impact on skills needs are important considerations. The regulatory framework needs to provide the most propitious conditions for companies in all parts of the audio-visual industries to flourish and maintain profitability. The skilled workforce requires the optimum conditions for creativity to facilitate production of the highest quality programmes.

Cultural worries are a problem within Europe itself as the Union seeks to unify economically without a common language

The final consideration, however, has to be with the enduring cultural worries of swamping, whether by American culture or the larger European cultures. In such cases for the political classes cultural value outweighs the economic benefits. This was effectively the French position in the closing stages of the Uruguay Round and it has many political sympathisers across the world. It is a problem within Europe itself as the Union seeks to unify economically without a common language. Politicians are right to be concerned about the future effect of these changes on society. The relative prosperity and well being of citizens will depend in part on the answers provided by the rules of the game in the audio-visual sector and their impact on people's lives through the cultural values of the films, TV programmes and information available to them.

14 One example of this rhetoric – that Britain could become the "Hollywood of Europe" – was adopted by some British producers in the early 1990s in arguing for various fiscal measures and a "levelling of the playing field" across Europe in relation to state subsidies for film production.

Antonio Pilati / Giuseppe Richeri

Strategic Alliances in the New Communication Environment

"The creation of agreements and acquisitions is a typical attempt by businesses to reduce the uncertainty ... while simultaneously acquiring skills outside the field of their own traditional experience. ... Moreover, diversification towards the content sector will also have to provide telecom companies with new sources of income to counterbalance the levelling of transport tariffs."

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Publications on media economics and new media policies in 15 different countries, e.g. Los satellites de television en Europa (Television Satellites in Europe, Madrid 1988), La tv che conta. La televisione come impresa (The TV which Counts. Television as Enterprise, Bologna 1993), and Televisione e qualità (Television and Quality, with C. Lasagni, Roma 1996). Member of the editorial boards of several international journals, consultant to academic, corporate and political institutions.

Foreword

The large number of mergers, acquisitions, intercompany investments, joint ventures and, in general, strategic alliances which, for some time now, have characterised the world of multimedia communications, is typical of phases of radical change. With the utilisation of digital technologies, new distribution channels, new methods of marketing and new forms of consumption, involving both products and communication services (both traditional and new), are being created.

Strategic alliances as a sign of uncertainty in a radically changing media environment

It would therefore appear that this is the right moment to start the long-term expansion cycle of a sector until recently dominated by unscrambled television. Those wishing to participate in the conquest of new markets must however not only avail themselves of considerable resources and specific know-how but also be capable of facing considerable risks and uncertainties. Hence the move towards strategic alliances. Our aim is to underline what is happening in the European context. We will do this by taking some of the most important alliances as an example.

The Stimulus of Uncertainty

Audiovisual and electronic communication businesses are increasingly oriented towards developing alliances, agreements, mergers and acquisitions in a sector faced by a large amount of uncertainty. In fact, businesses have to face a process of radical renewal in terms of products and services, organisation and marketing, suppliers and clients in order to have a share in a market whose training times and methods are extremely unpredictable. This uncertainty is caused by various factors.

Technological and financial resources are at stake

The first concerns the technological resources that offer enormous innovation and two weak points. One concerns the methods of transferring innovation from the research and development phase to market penetration. The other concerns the rate of innovation. In one case, this uncertainty is due to the fact that often, when the time comes to market the products (networks, services, terminals) they still have functioning defects, are poor quality and generally offer an unreliable service, thus damaging or delaying diffusion. In the other case, a problem arises when the context in which the economic marketing plan of a technologically-based means or service is defined and then subsequently upset by the creation of a technologically more advanced product – hence, rapid obsolescence.

The changing legislative environment

The second uncertainty factor concerns the rules. In various European countries the situation pertaining to rules is particularly unstable. Technical barriers between different communication sectors (convergence) are simultaneously abolished, the transition from a monopoly to competition within an important sector such as that of telecommunications occurs, the most suitable forms of the diffusion of new methods and services (cable-TV, interactive, on-line multimedia, etc) are delineated and a progressive internationalisation of players

and markets is apparent. In such a dynamic context, it is difficult to establish rules capable of guaranteeing equilibrium and flexibility, continuity and development.

Demand structures are unknown

The third factor concerns the uncertainty of the demand for new products and services. In view of the novelty of supply, the wide range of technical options, the fact that so many products and services are easily substituted and that, for the most part, it is a question of forming an economically solvent demand, it appears just as difficult to anticipate the timing and to foresee ways of developing the demand itself. The number of failures recorded until now in the launching of interactive multimedia services is an example of the degree of risk that characterises new communication markets.

Access to content is crucial

A fourth factor of uncertainty concerns access to more attractive products and services that offer greater guarantees of success for pay television, theme channels, pay-per-view services, etc. In reality, the competition to win the rights for the most important sporting events has drastically increased prices as is the case with the movie rights of Hollywood major studios. It is therefore necessary to find wider and more favourable conditions of exploitation to either reduce or share these risks.

Who will control the user terminal?

A fifth factor is linked to the control of user terminals. The moment there is the prospect of a large number of digital television channels with conditional access, the first person who manages to "market" his own set-top box within the family context could act as a gatekeeper, thus risking market fragmentation between incompatible terminals or the considerable reduction of competition among various operators.

Agreements, Alliances, Acquisitions and Mergers

The creation of agreements and acquisitions is a typical attempt by businesses to reduce the uncertainty, the risks and the growing complexity of the environment in which they operate, while simultaneously acquiring skills outside the field of their own traditional experience. In some cases it is a question of the business acquiring new market shares or penetrating new markets or, once again, of reaching the critical mass necessary to deal with a new development cycle, etc. Within the international context, over the last few years, there have been a large number of agreements among businesses (audio-visual, telecommunications, information technology) whose objective was one or more sectors undergoing convergence towards a chain of multimedia and interactive products and services in which the audio-visual sector plays a key role.

We will now examine the development of agreements from two viewpoints. First and foremost, we will examine the series of agreements registered, over the last few years, which have involved European, North American and Asian businesses. We will then go on to conduct a more in-depth analysis of a limited number of recent agreements that have played a particularly significant role in the European panorama.

From 1993 to 1995 there were 331 agreements between communication related businesses

Between 1993 and 1995, at the École National Supérieur des Télécommunications in Brest (France), 331 agreements, involving businesses belonging to three sectors, were registered. Their division, according to sector of origin, is shown in the table below:

Table 1: Agreements between Business Sectors

in %	Informatics	Telecom	Audio-visual
Informatics	14.5	10.3	23.3
Telecommunications		8.8	10.3
Audio-visual			17.8

The table briefly describes the percentage of agreements that involved:

- businesses in the information technology sector (14.5%);
- businesses in the telecom sector (8.8%);
- businesses in the audio-visual sector (17.8%)
- businesses in the information technology and telecom sectors (10.3%);
- businesses in the information technology and audio-visual sectors (23.3%);
- businesses in the telecom and audio-visual sector (10.3%);

(the remaining 15% of agreements were signed either by businesses belonging to the three above mentioned sectors or by other sectors).

From this chart, it would appear that, during the period considered, the audio-visual sector was the most active or rather the most strongly involved in terms of agreements. In reality, it is a question of a sector which, in view of convergence, represents the content that should give life to the services considered to have the most value added (different forms of pay TV, video on demand, etc.)

If the contents of each agreement are examined as a function of the sector to which the business belongs, the following data are obtained:

Table 2: Functions of Agreements

	Content	Access	Equipment	Finance	Distribution	Telecom	Total
Informatics	9.59	11.01	12.70	2.13	0.36	1.24	37.12
Telecom	3.37	8.70	3.2	2.13	0.36	4.97	22.74
Audio-visual	15.36	14.47	4.44	3.15	1.07	0.71	40.14
Total	28.6	34.46	20.43	7.82	1.78	6.93	100.00

The different variables used to analyse the agreements registered are dichotomous (presence or absence) and explain the object of the agreement:

- Content: an agreement in this sector gives the players involved access to the "content" resource, i.e. films, musical products, editorials or other.

Sources

Table 1: G. Dang-Nguieri & J. le Traon in Communications & Strategies. no. 19 Idate
Table 2: Dang-Nguieri & J. le Traon in Communications & Strategies. no. 19 Idate

"The content industry is characterised by a prevalent trend towards access to new players."

- Access: in this case the object of the agreement is access to the end user through a terminal (PC, television, set-top box, decoder, etc.);
- Equipment: these are agreements relative to any type of material that falls within the chain of enhancement of the multimedia industry;
- Financial participation: these are agreements with a purely financial content;
- Distribution: these agreements concern the distribution channels of products and multimedia services, from the acquisition of movie networks to that of cable networks.
- Telecom: these are agreements that concern telecommunication activities (services and equipment).

Access to the consumer and content are the most important reasons for strategic alliances

This second table shows that most of the agreements concern positions at the end of the chain: the agreements that concern access to the end user are positioned in first place with 34.4% while those concerning content are positioned in second place with 28.6% .

Within this context we feel that it is interesting to separate the content sector, which, in the agreements registered, showed the presence of European businesses such as Matra-Hachette, Bertelsmann, Kirch Group, Pearson, Reed International, Kluwer, etc. This is a sector characterised by two types of opposing actions.

Reasons to converge in the content industry

a) On the one hand, the content industry tends to converge owing to the fact that its contracting power increases considerably compared to businesses that are only active in distribution (broadcasters, video services, etc.);

b) On the other, the multiplication of distribution channels encourages a better segmentation of end-clients, it reduces the risks of the production of prototypes (which have the possibility of better targeting their own market) and lowers the barriers to the entrance of new players.

By analysing the agreements registered, it can be seen that 10 of these are relative to the first hypothesis, i.e. that of concentration, while 22 are relative to the entrance of new players into the contents market.

It therefore appears that the content industry is characterised by a prevalent trend towards access to new players. In general it is a question of new arrivals from the audio-visual sector, who formerly operated individually as directors, or producers linked to the majors and who have now signed agreements with other partners to work for themselves and to take advantage of the new opportunities offered by the creation of digital technologies. In conjunction with these agreements in which businesses already active in the content sector have participated, there are other agreements, of a more limited nature, in which businesses involved in the information technology sector participate and which also involve the content sector.

Some Paradigms

In reality, in this context it is not possible to provide a detailed explanation of the large number of initiatives. We have therefore chosen those which, during the course of the last year, appeared to be the most important on a European level.

The first case concerns two protagonists of unscrambled television, namely the merger between the television branch of Bertelsmann and the Compagnie Luxembourgoise de Télévision.

Alliance No. 1: Bertelsmann and CLT

At the beginning of April 1996 Bertelsmann announced the purchase of 50% of Audiofina, the financial holding company which owns almost all the shares of CLT, contributing Ufa, its own cinema and television branch (estimated to be worth 5 billion French francs) and 5.1 billion French francs in cash (about US$ 1 billion). Ufa in Germany and CLT will merge (probably in January 1997) into a single company which will control 89% of RTL (the German number one in commercial TV), 50% of Super RTL, 37.5% of Premiere (the only analogue pay-TV with about 1.4 million subscribers), 34.7% of RTL2 and 24.9% of Vox. CLT/Ufa's overall share is around 30% of the audience in Germany. They also have other sizeable television interests in the Benelux countries, in France (39.5% of M6 and 23.7% of TMC) and in the United Kingdom (29% of Channel 5).

Audiofina, the seller, groups the interests of the Belgian financier Albert Frère, Havas and Générale des Eaux. Through a complicated cascade of financial companies, Frère has the control, whereas Havas (who is also the main shareholder of Canal Plus) has little influence, which is further declining with the entrance of Bertelsmann.

The splitting up of the ownership of CLT has a certain weight in the evaluation of the factors which have guided the choice to make a merger with Bertelsmann. In actual fact the agreement is the result of a convergence of the extremely heterogeneous interests of three or four different actors: Bertelsmann, the CLT top management, Frère and, possibly, Générale des Eaux. These interests are of various kinds: strategic, political, financial.

Bertelsmann appears to be motivated first of all by a strategic interest: reinforcing its position in the television area and increasing its very recently formed operating capacity (it only started to diversify from paper to video in the 1980s). Alongside this primary interest, there are also tactical motivations regarding relations with the other European television giants. For Bertelsmann the original option was an alliance with Canal Plus (signed in 1994) to develop pay-TV on a European scale. However, a series of factors caused a crisis forcing Bertelsmann to rethink its position. There seem to be at least three factors which caused the crisis: the difficulty in consolidating the alliance with Canal Plus, especially outside Germany (as the latter never agreed to allow its German partner to enter

the share capital); the emergence of digital technology which raises the investment thresholds and, therefore, the risks on the pay-TV market; the advantage, rapidly gained by Kirch, its traditional competitor, in developing a digital platform in the German market.

At the beginning of 1996 the sum of these factors made the development of digital pay-TV (by now the central pivot of the pay-TV market) a very expensive option, with very high risks, at the same time split up among other actors of considerable weight (Canal Plus, Murdoch, Deutsche Telekom). Instead of the pay-TV option which was becoming rapidly less and less attractive, Bertelsmann preferred to orientate its television expansion (deemed essential) towards a more traditional area: free TV. This market is already on the way towards becoming mature, but it still offers good profit margins. From this perspective the Ufa/CLT merger has lots of advantages:

Advantages of the Bertelsmann/CLT merger

* it brings the battle for the leadership of RTL to an end;
* it guarantees certain supremacy on the major television market in Europe;
* it improves the position on the Benelux markets;
* it allows Bertelsmann's financial power to acquire an effective television return, together with the CLT know-how on the rights markets.

CLT also draws considerable advantages from the agreement from an industrial and corporate point of view. To start with, it escapes from the strategic isolation in which the three-way alliance (Canal Plus, Bertelsmann, BSkyB) placed it at the beginning of 1996. Stuck in the field of Canal Plus alliances (with whom it shares one of the reference partners, Havas), but without any right of say, before the agreement CLT found itself cut off from the pay-TV market, seriously questioned by its own partner on the German free TV market and possibly also with problems in making wide range investments. After the agreement it instead:

* became the leading company on the German TV market;
* found itself with sizeable financial resources for expansion in the coming years;
* gained access to the pay-TV market (it has a share of Premiere, it maintains its position in TPS, the consortium competing with Canal Plus for the development of digital TV via satellite in France).

Finally, for Frère, the ex-majority shareholder of CLT, there are strategic and financial advantages:

* it consolidates the alliance with Générale des Eaux which is proving to be one of the protagonists in Europe of the integrated TV/Telecommunications market;
* it is one of the central actors of the communication alliances in the Rhine area (Germany, France, Benelux);
* it makes the role of Havas more marginal;
* it monetarises its shareholding in Audiofina more efficiently.

To sum up, the CLT/Ufa merger provides its protagonists with:

- a strategic consolidation on the European free TV market;
- improvements in the tactical position vis-à-vis other operators;
- greater financial power.

Alliance No. 2: The founding of Mediaset

The second operation considered is the creation of Mediaset, the holding company controlling the main Italian commercial television group, with outside capital other than that of the family of the founder. After a complex financial operation which took place in three stages, Fininvest, the holding company of the Berlusconi family, reduced its share of Mediaset to 50.69% (updated figures as of August 8 1996), 4 weeks after coming out on the Stock Exchange and after the greenshoe action. The only other shareholders with over 3% were Nethold (6.45%) and Kirch (5.43%), who are also Fininvest partners in Telepiù. Apart from Albacom (the joint venture between BT and Bnl, the leading Italian bank), all the other main shareholders are financial operators and institutional investors.

From the Fininvest point of view the operation has three main aims, the first financial and the other two political (in the broad sense).The financial aim is probably the most important one. The 1993 balance sheet indicated debts for 3,920 billion lire (US$ 2,494 million) suggesting a situation close to the danger level with profits of 35 billion lire (US$ 22.3 million) and a turnover of around 11,000 billion lire or US$ 6,997 million. Some sales of companies made in 1994, especially in the insurance and mass distribution areas, did not solve the problems. The entry of fresh capital in the period 1994/1995 was a prime necessity.

The second aim concerns the political commitments of the founder of Fininvest. The transfer of around 50% of the share capital lessened the conflict of interests between the political activity of Berlusconi and the ownership of the second biggest Italian television group (with an audience share of over 40%).

The third aim was also of a political nature, but this concerns the internal life of the company. Most of the solutions proposed to decrease the shareholdings of the Berlusconi family implied transferring the control of the company (or new partners or an institutional type of management outside the family). The solution sought and found instead combines the entrance of new capital and the continuance of the historical management. A key role in reaching this result was played by the first three actors (i.e. the Rupert family, the Kirch group and Prince Al Walid) who had been convinced to invest in Mediaset without acquiring the control of the company. Their decision in fact paved the way for the next two stages which brought the Fininvest shareholding to the verge of 50%: the entrance of institutional investors and the placing of the company on the Stock Exchange.

The motivations of the first three shareholders appear at first sight to be strategic and secondly financial (they were convinced they were making a good investment). The strategic motivation lies basically in the decision to strengthen the three-party alliance (NetHold; Kirch Group; Mediaset) which in the turbulent

relations between European broadcasters can in the long run prove to be a precious tool. The subsequent transfer of NetHold to Canal Plus might appear to contradict this interpretation. However, on closer inspection the Rupert family, the main shareholders of NetHold, continue to be one of the protagonists of the European television scene (it owns 20% of Canal Plus) and in this position it can exert pressure through its alliance with Mediaset.

The Albacom investment assumes a particular aspect. This sealed the operating alliance established with the founding of Albacom Industriale (70% Albacom and 30%). With Albacom, BT repeats in Italy the strategy already applied in France (the alliance with Générale des Eaux), in the Benelux countries (alliance with NS, the state railways) and in Germany (alliance with Viag): reaching agreements with the leading national industrial and financial operators, to conquer a leading position on the TLC market which is due to be privatised. BT provides capital and know-how and in exchange demands experience of the domestic market, sales skills and infrastructures. From this perpective Mediaset – which has exceptional marketing skills, a wide sales network, considerable lobbying ability and a good network about to be digitised – represents a very interesting partner.

Alliance No. 3: Murdoch and Kirch

The third alliance is centred on the entrance (in mid-July 1996) of BSkyB into the share capital of DF 1, the digital platform launched by the Kirch group on the German market at the end of July. BSkyB acquired 49% of the company and in exchange agreed to invest £ 200 million (about US$ 340 million) in the operation, just under half the launch costs foreseen by Kirch of around one billion marks (the break-even point should be in 2000).

For Murdoch the result is extremely significant: after many failed attempts (the offer to take over Mediaset; the triangular agreement with Bertelsmann and Canal Plus to develop digital pay-TV in Europe), he has at last succeeded in entering the continental market, indeed the most important of the continental markets. The vertical integration strategy he develops on a world scale and which aims at obtaining a proprietary television outlet on all the most important markets (from Japan to India to Latin America) reaches a crucial stage. At the same time Murdoch consolidates a privileged relationship with the most important owner of rights in Europe and establishes good relations with Canal Plus which at this stage is developing an entente cordiale with Kirch.

For Kirch the operation is first of all of great financial value as it enables them to split up the considerable effort involved in launching DF 1. Secondly, it enables them, in perspective, to enter the British market as it opens the door to the possibility of participating in the capital of BSkyB (this operation seems to be at an advanced stage of consideration).

Alliance No. 4: Canal Plus and Nethold

The fourth case concerns the two main protagonists of pay television in Europe. This is the merger between Canal Plus and Nethold (there have been rumours of incorporation), an operation that still has to be approved by the Euro-

pean Union. Canal Plus will acquire an important share of the activities of the Nethold Group, in particular FilmNet, the share in Telepiù and Irdeto (with their debt amounting to about US$ 330 million) for an overall value estimated at approximately US$ 1.8 billion. In exchange, the two Nethold partners, the Swiss-South African group Richemond (luxury goods and tobacco) and the South African Group MIH (pay-TV), will receive 6.1 million shares in Canal Plus plus US$ 45 million in cash. Their share quota will be equal to 20% (Richemond 15% and MIH 5%) and will give them the right to three members on the board of directors of Canal Plus just like the other two largest shareholders, Havas (17.3%) and Compagnie Générale des Eaux (15.4%). In 1996 Nethold activities should register losses amounting to US$ 140 million. Break-even will probably be reached in 1999.

Reasons for Canal Plus and Nethold to merge

According to the executive staff of Canal Plus, the digital television battle will probably be the hardest battle for the next few years; in order to win it, it will be necessary to control more territories and more alliances. The first result of the operation will be that Canal Plus will be in a privileged position to develop digital television in a good portion of Europe; i.e. in France, Belgium, Holland, Scandinavia, Spain and probably Italy (together with Kirch). Among the markets targeted by Canal Plus for this operation, the most promising is Italy, but in this case it will be a question of working with Kirch (which holds a share equal to 45%). In reality, the merger, rather than being an attack on the new digital television market in Europe, was interpreted as a defensive action imposed by the alliance between Kirch and Murdoch which, just a few weeks earlier had acquired 49% of DF 1.

According to inside sources at Canal Plus there are three main elements that explain the merger. The first: to prevent Nethold from joining forces with Direct TV, the powerful American digital television, thus enabling it to become a dangerous competitor on a European level. The second: to open some markets where Canal Plus was not able to gain a foothold (Eastern Europe). The third: to exploit the rights to sports events and films in a larger number of markets.

The set-top box battle

But the merger will also offer Canal Plus the opportunity of ending the battle for supremacy of the two decoders manufactured respectively by Irdeto, a branch of Nethold, and by Seca, a branch of Canal Plus. Kirch had obtained the licence from Irdeto to develop and market its D-box decoder in Germany targeted to the subscribers of DF 1 digital channels. Canal Plus in conjunction with Seca had perfected its Mediabox decoder for the clients of the services that the MMBG consortium (now abandoned by Deutsche Telekom) was supposed to have launched in competition with DF 1. The prospect now opened by the unification of these two businesses is to develop a second generation decoder capable of combining the advantages of the two original devices. However this is not an immediate prospect because, in the meantime, Kirch has ordered the large scale production of D-boxes in order to provide subscribers of DF 1 with a decoder and

Premiere has ordered the production of Mediabox, which it intends to launch by 1996, for supply to digital channel clients.

This is, therefore, a rather complex operation that will have implications in various sectors of the audio-visual industry and which has not yet been concluded. Especially, with regard to the entrance of Canal Plus into Italy as Kirch's partner in Telepiù. The first problem is that Kirch, according to the trade press, has the power to stop the transfer of Telepiù shares from Nethold to other partners and in order not to exercise this power it appears to have stipulated two conditions. First and foremost, Kirch would like Canal Plus to support the entrance of BSkyB (40% of which is held by News Corp belonging to Rupert Murdoch) into Premiere, currently the only pay television channel in Germany with approx. 1.45 million subscribers. Canal Plus should sell a part of its shares to the British group and convince Bertelsmann to do the same thing so that the shares will be equally divided among Bertelsmann, Canal Plus, Kirch (also a partner with a 25% share) and BSkyB. Secondly, Kirch wants Canal Plus' support to introduce Premiere programming and its digital channels into the DF 1 package, the digital television service recently started by it in Germany. But Premiere, where until now Kirch has had a minor position, has already announced that it intends to launch a digital television service in competition with DF 1. Canal Plus will therefore have to convince Bertelsmann to accept the operation. But Bertelsmann's position regarding this subject is known: Kirch must provide Premiere with the American films to which it has the rights instead of giving them exclusively to the DF 1 pay-TV movie channel.

The European Union might be able to solve this situation by opposing BSkyB's entrance into Premiere in order to prevent concentration in a single company of four large television companies.

Alliance No. 5: Cable & Wireless and UK cable companies

The fifth agreement is that between "C&W and the Cable Companies in the UK". Cable & Wireless would like the new company to become an integrated TLC and media provider for local and long distance services, providing telephony, video, data transmission, Internet services, as well as a wide range of interactive multimedia services. This would place C&W in a better position to compete with BT, the leaders on the TLC market in the UK, and with a set of old and new players who are about to occupy the emerging digital and multimedial market.

Facts on CWC

This operation will lead to the setting up of Cable & Wireless Communication, which will reach an estimated value of between £5 and 6 billion (about US$ 9.3 billion) and will become the main British cable operator :

* with a series of licences which include 5.948 million homes, or 33% of the total homes covered by licence so far : Telewest, the second biggest provider, covers 3.889 million homes;
* with 2.55 million homes already passed by cable, or 35%, in the whole of the UK, whereas Telewest covers 2.012 million homes passed;

"The main interest in the operation for cable operators is to gain access."

* with 496,000 subscribers to their cable networks, against the 424,000 Telewest subscribers.

The shares of the new company will be split up as follows :

* Cable & Wireless 52.6%
* Nynex 18.5%
* Bell Cablemedia 14.2%.

Cable & Wireless will invest £362 million (about US$ 615 million) in the operation. Its main aim is to exploit the infrastructures of the cable operators to provide its branch Mercury with the necessary local telephone connections in order to build it up to handle the increasing competition on long distance telephone services. Being able to increase the direct connections with the users increases the possibility of providing them also with long distance connections.

The telephone subscribers to the Bell Cablemedia, Nynex and Videotron networks (566,000 domestic users and 55,000 business users) already widely use Mercury's long distance services, as they cost less than the BT ones.

The main interest in the operation for cable operators is to gain access, through Mercury, a company which has a strong cash flow and sizeable profits, to the resources needed to extend their networks in the licensing areas. At the same time they want to increase their rate of penetration, which is at present around 20% and is certainly not sufficient to reach a point of economic equilibrium.

TLC Managers, New Players in Digital Video Service Game

Until now no category of players capable of assuming a key role in the training and exploitation of the new digital television market have come on the scene: TLC businesses. These are players to whom particular attention should be paid because they could become the leaders of large future alliances. And, as can be seen, they are already moving, in part, towards the field of television and new services.

The telecom industry moves into television services

The convergence between telecommunications and European scale television is appearing in an ambiguous, but fairly widespread way, to a point where it would be advisable to focus on this subject. TLC managers are becoming interested in different types of television and video services either directly or through branches and holding companies. These initiatives concern various segments of television activity.

Video on demand services: BT made a first experiment with VoD in Colchester, Ipswich and will shortly be doing the same in the area of Westminster, London, while Telecom Italia, through the holding company Stream, has completed its commercial experiment with VoD in Milan and in Rome and will implement a regular service from September onwards.

Pay per View Services: For more than a year, France Télécom has implemented a pay per view service in partnership with the Lyonnaise des Eaux; Telecom Italia, through Stream, recently signed an agreement with Telepiù to re-transmit by cable series A football matches on a pay per view basis and has rented two transponders on the digital satellite Hot Bird Plus.

Management of cable-TV networks: France Télécom holds the third position among the French operators with 353,000 subscribers to cable-TV networks and over one million "houses equipped." Deutsche Telekom has over 16 million subscribers to its cable TV networks; Telefónica de España has founded (it does not however appear to conform to the laws in force) some companies to cable the largest Spanish cities including Barcelona and Madrid; Telecom Italia is in the process of cabling the largest Italian cities with the aim of reaching 10 million housing units by the end of the year 2000: finally, different telecommunication companies mainly outside Europe (West, Telewest, Nynex, Bell Canada, etc) manage a large part of cable television networks and cable telephony in the UK.

Packaging all sorts of communication services as the driving force

The possibility of supplying a wide range of services while presenting the users with a single invoice and offering discounts and cross-promotions of various service packages would provide new marketing tools to foster the increase in the present rates of penetration of the subscriptions. The new packages could in fact offer fixed and mobile telephony services, basic and premium multi-channel television subscriptions, interactive and on demand services (audio and video on demand, home shopping, home banking, etc.) with costs varying according to the demands and requests of the various social groups. Operating in this direction should help to improve user fidelity, thus reducing the high subscriber churn rate which at present affects the subscriber portfolio management costs.

Another advantage could stem from the considerable economies of scale which should lead to a rationalisation of the general services and to a marked reduction in their costs with an estimated saving of £150 million (about US$ 255 million) in the first year of business. On the strictly TV side Cable & Wireless Communication would certainly be in a far stronger bargaining position than the present cable operators both with regard to the content providers and particularly to BSkyB, their main suppliers of TV programmes.

Results of the CWC alliance

To conclude, if the operation gets the green light from the anti-trust authorities, the general results will be:

a) a clear concentration of the cable industry and a reinforcement of the sector vis-à-vis BSkyB, the satellite TV channel bouquet provider and market leader of British pay TV;

b) the creation of a strong TV pole capable of generating new channels specifically for cable TV networks;

c) the reduction in the level of competition in the long-distance and international TLC services sector; in fact with this operation Mercury will acquire a market share which it will be able to control even when other operators start offering cheaper international and long distance rates than it does itself.

Commercial Management of "Television" Satellites

Deutsche Telekom is the largest single shareholder in Astra, currently the largest satellite television system in Europe: Stream, the company of Telecom Italia, has rented two digital transponders on the Hot Bird 2 satellite soon to be launched for the direct transmission of television channels.

Business or industrial agreements with broadcaster and video-content providers: BT has signed agreements with BBC, Carlton Television, Pearson and with some major USA companies for the supply of television programmes: Stream (Telecom Italia) has signed agreements with the cinema company Cecchi Gori for audio-visual products to be offered on VoD and on pay-per-view and with Telepiù for the re-transmission of football matches in pay-per-view on cable networks. Until recently, Deutsche Telekom was the largest shareholder of the MMBG consortium founded to create digital and encrypted television channels; other joint ventures are under consideration.

Supplying video services appears more profitable than supplying infrastructures

The interest of TLC providers in audio-visual services (television and video services) must not be considered a passing one but rather a basic feature of their medium- and long-term strategy. Going from the supply of transport infrastructures to the supply of services with a higher value added is today absolutely imperative. The need for the telecom companies to massively enter the market for the supply of value added services is illustrated in all the sector analyses and in the public statements of the managers of the leading companies in Europe and in the USA. It can be seen in the various initiatives which are about to be defined or are already operational to guarantee the take-off of the information highways (ISDN, Integrated Services Digital Network Broadband) and the increase in value of the huge investments in the new networks. Telecom Italia plans to invest 13,000 billion lire or about US$ 8.5 billion to build the first section of a dedicated information highway; in France the Therry Report indicates that by 2010 40-60,000 billion lire or US$ 25 - 40 billion will have to be invested to build the new TLC networks; a similar estimate has been made by a study group on the information highways set up in 1994 by the British Ministry of Industry and Trade.

Video services could counteract potentially crippling revenues from traditional telecom services

In this way the telecom companies hope to improve their position in a scenario where the monopolies will soon be dismantled and the communications industry will have to accept competition both on the services and on the network sides (the EU directive foresees complete liberalisation as of 1998). Moreover, diversification towards the content sector will also have to provide telecom

companies with new sources of income to counterbalance the levelling of transport tariffs. In all the countries where telecommunications have been made competitive from the USA to Japan, the United Kingdom and Sweden, there has been a rapid alignment of tariffs to the real costs. Television services and specialised or personalised videoservices, unlike many new services (home banking, home shopping, home teaching, telework, telemedicine, etc.) where the development times are still uncertain, have the advantage of addressing an existing mass public with forecastable and foreseeable consumption behaviour.

The powers of telecommunication companies

This important phenomenon will speed up the unification of TLC and television but it also involves serious risks. The TLC providers have in fact a far greater financial power than the broadcasters. They also have the means to overcome the entry barriers to the entertainment and videoservices market. This means that :

a) they will be strong potential competitors on the market for buying rights (films, events, etc.),

b) they are able to sustain initiatives where economic success may take a long time; the television services and the videoservices supplied by the TLC providers will necessarily be in strong competition with the traditional channels in an attempt to conquer the attention and time of the viewers who can and want to pay for the service.

c) part of the initiatives of the TLC providers in this field will be directly in competition with the activities of the digital television channels which are about to take off; these are in fact channels specialising in information, programmes for children, quality documentaries, "cultural" programmes, educational/training programmes, etc. (the VoD services of BT and Telecom Italia-Stream are also pushing the offer of educational programmes and documentaries; in Italy Stream is also working on a coded TV channel for children together with other partners).

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Strategic Alliances in the New Communication Environment

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The Harmonisation of Copyright and Related Rights

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"The need for safeguarding a proper return for the efforts of authors, performers, phonogram producers, broadcasters and other rightholders has always been obvious in modern societies. ... On the other hand, ... limitations of exclusive rights are intended to create a balance between the legitimate interests of authors, producers, publishers and other categories of rightholders and those of users, consumers, competitors, educational and scientific communities, and society at large."

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"The history of copyright protection has always been determined by a series of reactions and adaptations of the existing legal environment to technical changes."

Introduction

The Issue of the Scope of Protection

The convergence of the 15 EU Member States' legislation in the field of copyright and related rights is not only of considerable political and legal significance but relates to a sector which is of utmost commercial importance. The turnover of the so-called copyright and related rights "industries" (print media, arts, music and sound recordings, films, broadcasting, computer programmes, databases and other types of multimedia works) is currently estimated at roughly 5% of the European Union's GDP. The rapid growth of the information technology and entertainment industries contributes to the widespread dissemination of cultural, educational and otherwise useful goods and services. Intellectual property has thus become a particularly valuable resource in modern societies.

New categories of works, new forms of marketing

The history of copyright protection has always been determined by a series of reactions and adaptations of the existing legal environment to technical changes. New categories of works emerged, such as photos, films or computer programmes. Furthermore, new forms of marketing were developed, such as broadcasting, television or videograms. Along with these developments, the need for safeguarding a proper return for the efforts of authors, performers, phonogram producers, broadcasters and other rightholders has always been obvious in modern societies. Indeed, intellectual creations and related efforts would not be undertaken without any entitlement to appropriate rewards.

On the other hand the international and domestic legislators had and have to take competing interests and concerns of other parts of the public into account. The relevant notions are competition, freedom of information, freedom of scientific research, public domain use, fair dealing or fair use, private use, and other types of exceptions or legal licences. Such limitations of exclusive rights are intended to create a balance between the legitimate interests of authors, producers, publishers and other categories of rightholders and those of users, consumers, competitors, educational and scientific communities, and society at large.

What will, therefore, always be controversial in the course of law-making which is intended to adapt the existing body of copyright law to the new challenges presented by technological change will be the issue of how to determine the correct balance of interests and where to draw the borderline between the exercise of derogations and limitations in respect of economic rights and outright intellectual property piracy.

The Need for a Convergence of Copyright and Authors Rights

One of the basic features of copyrights and related rights is that they are exercised on a territorial basis. Different traditions in national legislation have resulted in considerable discrepancies in the way in which intellectual property is protected throughout Europe. This has resulted in obstacles to trade in copy-

righted goods and services as well as the creation of distortions of competition. Such a situation runs counter to the principles of the Common Market which was already to be established by 1 January 1969 . The basic freedoms affected comprise *inter alia* the free movement of goods and the provision of services. Under these circumstances, the Commission services began in the late 1970s to contemplate working programmes which were intended to do away with this unsatisfactory situation.

Two systems of copyright protection within Europe

The basic difficulty in taking any initiatives aimed at the harmonisation of intellectual property laws has always been the fact that the EC Member States are divided into copyright and *droit d'auteur* countries.[1] Whereas the United Kingdom and Ireland apply "copyright", 12 Continental EU Member States follow the authors' rights tradition. The Netherlands traditionally pursues a copyright policy which is somewhere in between the two competing approaches.

Differences until recently

The main distinctive features of the two basic conceptions[2] were until recently as follows:

- Personalist versus economic approach: Most continental EU Member States attach a high importance to a personalist aspect of authors' rights, according to which a work is inseparable from the person who created it. This resulted in the creation of unwaivable moral rights of disclosure, paternity and integrity in the jurisdictions concerned. By contrast, the common law countries are unfamiliar with unwaivability or other restrictions on the transfer of rights. Furthermore, they granted until recently only economic rights. Such rights may frequently be vested in legal entities *ab initio*. Employers will be initial rightholders in accordance with the principle of "work-made-for-hire".
- Authorship: In continental Europe authors' rights had originally been designed to protect the authors of books. Under the common law copyright systems protection was instead granted to publishers.
- Formalities: Under the common law concepts there were originally certain prescriptions of formalities such as registration requirements or obligations concerning the printing of copyright notices on the work. Whereas continental EC Member States have also granted authors' rights automatically, the common law countries have only abandoned formalities as a result of their adherence to the relevant multilateral instruments.
- Originality: Similar differences traditionally applied in relation to the eligibility criterion for protection. Under the Anglo-Saxon concepts it has so far been sufficient to employ "sufficient skill, labour and judgment" which meant that the work originates from the author and is "not copied". In civil law countries only intellectual creations reflecting the individuality of the author were protected and a very high level of originality (qualitative or aesthetic merit) was sometimes required. This resulted in a situation where far more is "copyrightable" than covered by "authors' rights".

1 For a thorough study on the origins of "copyright" and "droit d'auteur," Ginsburg, A Tale of Two Copyrights : Literary Property in Revolutionary France and America, in Sherman/Strowel (eds.), Of Authors and Origins, Essays on Copyright Law, Oxford 1994, pp. 131 et seq.; Davies, The Convergence of Copyright and Author's Rights – Reality or Chimera ? [1995] IIC 964 et seq.

2 The distinction has been simplified for the purposes of this contribution. For a more detailed discussion of the "at least two quite distinct traditions within the common law net of copyright laws," Cornish, The Notions of Work, Originality and Neighboring Rights from the View Point of Common Law Traditions, in: WIPO (ed.), WIPO Worldwide Symposium on the Future of Copyright and Neighboring Rights, Le Louvre, Paris, France – June 1 to 3, 1994, Geneva 1994, pp. 81 et seq.

- Neighbouring or related rights: Neighbouring rights related to the rights of authors *strictu senso* have developed in Continental Europe thus granting protection to specific subject matter below the threshold of originality. Their direct object is the protection of certain forms of economic activity, rather than the recognition of creativity. Indeed, the protection of phonogram producers and broadcasters as well as that of performers, who are only "auxiliaries" of creators, did not fit into the classic continental concept of authorship. In particular the United Kingdom took a different approach by granting copyright protection to sound recordings and broadcasts vested in the maker thereof.
- Catalogues of limitations versus fair use / fair dealing exceptions: Whilst there is common ground that limitations or exceptions must not unreasonably prejudice the legitimate interests of authors or other rightholders, there are 15 different views in the 15 EU Member States as to what extent the exclusive rights of the rightholder may be cut back "in special cases". In addition, common law countries apply doctrines of fair use / fair dealing to which concrete shape will only be given by case law, whereas under the civil law approach precise catalogues and enumerations of limitations are provided for.

New challenges and the European Commission

Whilst such discrepancies in copyright and related rights law should not be overestimated – all EU Member States having already acceded to the Berne and Rome Conventions, which are the relevant multilateral instruments at the global level[3] – the European Commission has always taken the view that the absence of harmonisation in the field of intellectual property could hamper the effective functioning of the Single Market, which was to be established by the end of 1992. In addition, it was felt that the Member States' laws needed to be adapted to meet technological changes and new challenges. Instead of an ad hoc development of such national legislation, contributing to a further fragmentation of the market, the required legislative response should come at the Community level.

In order to prepare for working programmes the Commission services organised various consultation exercises and public hearings, undertook dozens of studies and had several hundred meetings with virtually all interested circles. In particular, it formulated two Green Papers and two communications on the required "follow-up". By doing so the Commission took duly the need for openness into account.

3 Unfortunately, certain Member States would still have to take action on the Conventions, as they are only signatories to earlier versions of the text.

"Employers are entitled to exercise the economic rights in programmes created by their employees."

The 1988 Green Paper and the 1991 Follow-up

In June 1988 the Commission published its Green Paper on "Copyright and the Challenge of Technology".[4] Since it was intended to serve as a consultation document it set out the Commission's own views on certain issues and invited comments from third parties. The 1988 Green Paper identified 10 areas where the Commission considered Community initiatives preferable to independent action at the Member State level.

The consultation process led to the publication in January 1991 of the "Follow-up to the Green Paper".[5] It set out to define a general policy programme; outlining the steps the Commission proposed to take following the Green Paper and the numerous responses to it. In the "Follow-up" the Commission took the view that there was a need for a basic level of harmonisation of copyright and related rights law in the Community. Consequently, nine different topics were identified. Whilst a proposal for a Council decision requiring Member State accession to the Paris Act (1971) of the Berne Convention (1886) and to the Rome Convention (1961) failed,[6] the 1991 working programme[7] has in the meantime resulted in the adoption of five Council of Ministers Directives:

Five Council of Ministers Directives already adopted

- Council Directive 91/250 on the legal protection of computer programmes[8];
- Council Directive 92/100 on rental rights and lending rights and on certain rights related to copyright in the field of intellectual property[9];
- Council Directive 93/83 on the coordination of certain rules concerning copyright and rights related to copyright applicable to satellite broadcasting and cable retransmission[10];
- Council Directive 93/98 harmonising the terms of protection of copyright and certain related rights[11];
- European Parliament and Council Directive 96/6/EC on the legal protection of databases.[12]

Furthermore, the Commission adopted in March 1996 a proposal for a directive on the resale right for the benefit of the author of an original work of art.[13]

The European Directives

The Software Directive

Council Directive 91/250/EEC[14] gives copyright protection to computer programmes as literary works within the meaning of the Berne Convention for the Protection of Literary and Artistic Works. The question of authorship is widely left to the EU Member States. Employers are entitled to exercise the economic rights in programmes created by their employees. Moral rights are excluded from the scope of the Directive.

4 COM (88) 172 final.
5 COM (90) 584 final.
6 COM (90) 582 final. Nevertheless, Member States were finally required to proceed accordingly by virtue of Article 5 (1) of Protocol 28 of the Agreement on the European Economic Area (Treaty of Porto, 1992).
7 For further details Cohen Jehoram, The EC Copyright Directives, Economics and Authors' Rights, [1994] IIC 821 et seq.; Jorna & Martin-Prat, New Rules for the Game in the European Copyright Field and Their Impact on Existing Situations, [1994] EIPR 145 et seq.
8 OJ No. L 122, 17.5.1991, p.42.
9 OJ No. L 346, 27.11.92, p.61.
10 OJ No. L 248, 6.10.1993, p.15.
11 OJ No. L 290, 24.11.93, p.9.
12 OJ No L 77, 27.3.1996, p. 20.
13 COM (96) 97 final, 13.3.1996.
14 For a guide to the Directive cf. Czarnota & Hart, Legal Protection of Computer Programmes in Europe, London 1991.

The rightholder has a number of exclusive rights: the right to do or authorise reproduction, translation, adaptation, arrangement, and any form of distribution to the public, including rental.

However, some exceptions to these exclusive rights are listed. Normal activities, e.g. loading and running the programme, observing and testing its operation, are free.

The most important exception is the possibility of decompiling a programme to make it interoperable with other programmes (= reverse engineering). A number of conditions aim at limiting decompilation to the minimum which is necessary in order to achieve interoperability without prejudicing the rightholder's legitimate interests by creating, for example, a competing programme or a programme infringing its copyright.

With respect to law enforcement, rules on seizure of infringing copies and means to circumvent encryption / copy protection systems are prescribed.

Level of originality harmonised

The striking point of the Directive is that the level of originality (eligibility criterion for copyright protection) has for the first time been harmonised at the European level for a specific category of copyrightable work. The programme must be the "own intellectual creation of its author". No other criteria are admitted. This uniform level has required 12 Member States to lower the threshold for granting protection and the remaining three to "lift the bar". It should also be noted that protection under the Directive is strong and that in particular no home copying exceptions may apply. In addition, the Directive, for the first time, allows decompilation. This point was the subject of intense debate and resulted in a pragmatic compromise which ascertains in practice that the information required for establishing interoperability is made available.

Only three Member States had implemented the Directive by 1 January 1993, its implementation deadline. In the meantime all Member States have enacted implementation measures. A review of such national legislation has unfortunately revealed a number of inconsistencies with Community requirements which in certain instances will lead to infringement proceedings under Article 169 of the EC Treaty.

The Rental Directive

Directive 92/100/EEC[15] sets out to provide for an exclusive right to authorise or prohibit the rental and lending of both copyrighted works and objects subject to neighbouring rights. Furthermore, it provides for a general protection of neighbouring rights including the right of fixation, reproduction, broadcasting and distribution.

The rental right is established for the benefit of holders of copyrights. Consequently the author retains the right to authorise the rental of a copy of his work,

15 For a guide to the Directive cf. Reinbothe & von Lewinski, The EC Directive on Rental and Lending Rights and on Piracy, London 1993.

even after the copy has been sold. This means, in other words, that the rental right is not exhausted.

Rental right not exhausted by sale

Not only authors, but also producers of films and phonograms and performers (concerning the fixation of the performance) can authorise or prohibit the rental of the products or fixations, even though the copy in question has already been distributed. However, in order to facilitate the rental of films, the Directive prescribes that a performer shall be presumed to have transferred his rental right to the producer. Member States may extend the presumption into an automatic transfer of the rental right to the producer. They may also provide for a similar presumption with respect to authors. In the case of transfer or assignment of the rental right the author or performer shall retain a right to equitable remuneration. This right is unwaivable. Therefore, with respect to authors and performers, the rental right has the character of an economic guarantee, rather than a right to authorise the rental.

Member states may derogate from the exclusive public lending right established by the Directive, provided that at least authors obtain a remuneration for such lending.

Rights of performers

As regards neighbouring rights the Directive follows closely the Rome Convention on the protection of performers, producers of phonograms and broadcasting organisations, but goes beyond it in various respects. Performers have the right to authorise or prohibit the fixation of their performances, the broadcasting and communication to the public thereof, as well as the reproduction, rental and distribution of the fixation. Broadcasters enjoy similar exclusive rights in relation to fixations of their broadcasts, including reproduction, rebroadcasting by wireless means, communication to the public and distribution. Phonogram and film producers are vested with the rights to authorise or prohibit reproduction, rental and distribution in respect of their phonograms or originals and copies of their films. Phonogram producers benefit from a remuneration right when a phonogram is broadcast.

Parallel imports into the Community are ruled out under the Directive since the distribution right shall *only* be exhausted where the first sale *in the Community* of the object concerned is made by the rightholder or with his consent. The rental right remains in any event totally unaffected.

Member States may provide for a number of limitations to the related right referred to in the Directive, e.g. private use, use of short excerpts, ephemeral fixations and for teaching as well as scientific research purposes.

Member States were under a duty to comply with the Directive no later than 1 July 1994. 11 Member States have thus far notified implementing measures. Infringement proceedings against the four Member States which are still lagging behind will soon lead to cases before the European Court of Justice (ECJ).

The Cable and Satellite Directive

Directive 93/83/EEC provides the missing element to the "television without frontiers Directive" (89/552/EEC), which was adopted in 1989 without a chapter on copyright. Cross-border satellite broadcasting and the cable retransmission of programmes from other Member States was obstructed by differences between national rules on copyright, and a certain degree of legal uncertainty. Rightholders were in fact exposed to the threat of seeing their works exploited without payment of remuneration, or that individual holders of exclusive rights in various Member States might block their exploitation rights.

Country of origin is responsible

The Directive has done away with this situation. It establishes that copyright responsibility for the communication to the public by satellite arises in the country of origin of the broadcast. As far as third countries are concerned, under certain conditions (uplink from or broadcaster established in one Member State), communication to the public by satellite from non-member countries will be deemed to occur within a Member State.

Rights for a satellite broadcast must be cleared in the country of origin between the broadcasting organisation and the rightholders. In determining the licence fee broadcasting organisations and rightholders enjoy contractual freedom (within the limits of competition law) to consider criteria such as the potential or actual audience of the broadcast, the language of the broadcast or other criteria that they consider appropriate. The Directive also includes specific transitional rules for contracts existing before 1 January 1995.

Furthermore, the Directive harmonises the rights of performers, phonogram producers and broadcasting organisations with regard to satellite broadcasting according to the principles established by Directive 92/100/EEC. Such a Community-wide standard was necessary in order to avoid "copyright havens" in the country of origin.

As far as simultaneous, unaltered and unabridged cable retransmission is concerned, the Directive introduces rules for the collective management of such cable retransmission rights. Cable operators therefore have to negotiate with a number of associations of rightholders, each association representing a given category of rightholders (such as authors, film producers, performers etc.). A cable operator can only retransmit a programme after all the relevant associations have given their consent. Negotiations between cable operators and associations are promoted by two additional measures. If the negotiation process threatens to be blocked in a deadlock, each of the participants can request the assistance of a mediator. And secondly, none of the negotiating parties may refuse to enter negotiation without valid justification.

Majority of member states delay implementation

The Directive's implementation deadline expired on 1 January 1995. As of 15 October 1996 only six Member States had notified implementing measures.

Infringement proceedings against the remaining nine Member States were far advanced.

The Term Directive

Directive 93/98/EEC harmonising the term of copyright and certain related rights[16] is an indispensable element for the establishment of the Single Market in goods and services linked to the copyright and related rights "industries". It sets out to establish a total harmonisation of the durations concerned: for copyright at 70 years pma (*post mortem auctoris*) or 70 years after an anonymous or pseudonymous work is lawfully made available to the public, and for related rights at 50 years after the event which sets the term running.

In order to have due regard for established rights in certain Member States harmonisation of the terms of protection had to take place on the basis of the longest durations existing in Member States. The Directive grants a high level of protection and is thus conducive to the harmonious development of literary and artistic creation in the Community. Rightholders who are not Community nationals but qualify for protection under an international instrument benefit from the Directive's terms of protection only subject to the so-called comparison of terms (the duration should not exceed that fixed in the country of which the rightholder is a national). This rule applies without prejudice to the international obligations of Member States.

Director is to be considered as an author

The Directive constitutes an important achievement because harmonisation is total and deals with crucial issues such as the term in case of joint authorship or the duration of the protection of cinematographic or audiovisual works. It also confirms that the principal director of a cinematographic or audiovisual work is to be considered as an author. Furthermore, it provides for a uniform threshold of originality for copyrightable photographic works (eligibility criterion for protection). Finally, it creates a new related right protecting previously unpublished works and grants an optional protection of critical and scientific publications.

The Directive's provisions on application in time are particularly noteworthy. The terms of protection provided for by the Directive apply to all works and subject matter which are protected in at least one Member State , on 1 July 1995. What is quite remarkable is the combined effect of such provisions and the principle of non-discrimination on grounds of nationality of the EC Treaty as interpreted by the ECJ in the "Phil Collins case".[17] According to a Commission staff working paper,[18] the joint application of these provisions leads, in principle, to protection throughout the Community of any work of which the author or one of the authors is an EU national who died less than 70 years before 1 July 1995. The same also holds for performers whose performances were published less than 50 years before 1 July 1995.

16 For further details Maier, L'harmonisation de la durée de protection du droit d'auteur et de certains droits voisins, Revue du Marché unique européen 1994, pp. 49 et seq.; Antill & Coles, Copyright Duration: The European Community Adopts 'Three Score Years and Ten', [1996] EIPR 379 et seq.

17 Joined cases C-92/92 and C-326/92 [1993] ECR I-5145.

18 For details Gaster, The European Commission Staff Working Paper on the Implications in the Field of Copyright and Related Rights of the European Court of Justice's "Phil Collins" Ruling, RIDA No. 168, April 1996, pp. 2 et seq. (61 et seq.).

Member States were required to implement the Directive before 1 July 1995. By October 1996 11 Member States had adopted the necessary national regulations and another two had draft legislation pending. The remaining two might face ECJ proceedings soon.

The Database Directive

Directive 96/9/EC provides for the legal protection of databases in any form (e.g. electronic and paper form, on-line and off-line).[19] Copyright protection is granted in accordance with Article 2 (5) of the Berne Convention and Article 10 (2) of the TRIPs Agreement which was adopted in 1995 as a result of the Uruguay Round of multilateral trade negotiations. Thus collections of works and compilations of data or other materials are likewise covered. In addition, the Directive introduces a sui generis regime setting out to protect substantial investments in databases for a period of 15 years.

Investments in databases protected for a period of 15 years

The Directive harmonises copyright applicable to the structure (schema) of a database in line with similar provisions contained in the Computer Programmes Directive. Therefore, it prescribes the same level of originality as the eligibility criterion for protection ("the author's own intellectual creation").

The rightholder has a number of exclusive rights: right to carry out or authorise reproduction, translation, adaptation, arrangement, alteration, any form of distribution to the public, any communication, display or performance to the public, etc. Optional limitations (exceptions) to the restricted acts are subject to an exclusive enumeration, taking into account the fact that copyright as covered by the Directive applies only to the selection or arrangement of the contents of a database.

The object of the sui generis right is to ensure protection of any investment in obtaining, verifying or presenting the contents of a database for the limited duration of the right. Such investment may consist in the deployment of financial resources and/or the expending of time, effort and energy.

Restricted acts relate to unauthorised extraction and/or re-utilisation of all or a substantial part of the contents of a database. The right of the database maker to prevent extraction and/or re-utilisation is a new type of intellectual property right which may be transferred, assigned or licensed.

The exceptions to the sui generis right are in line with the limitations under the copyright chapter. They relate to substantial parts only and do not include private copying of digital databases.

The term of protection is fifteen years and renewable in case of a substantial new investment. The sui generis right is available to third country beneficiaries on the basis of reciprocity. Under those circumstances the European Community and its Member States have recently proposed the conclusion of an international convention of the sui generis protection of databases.

19 For a detailed commentary Gaster & Powell, Legal Protection of Databases in Europe – A Guide to the EC Directive (to be published in 1997).

The Directive's implementation deadline is 1 January 1998. No implementing measures have been recorded so far.

The Proposal on "Droit de Suite"

Artist's resale right

The purpose of the proposal for a directive is to harmonise the artist's resale right (droit de suite).[20] The artist's resale right can be defined as the right of the author, or after his death of his heirs or other beneficiaries, to receive a percentage of the price of a work of art when it is resold. On the basis of the relevant provision of the Berne Convention the proposed legislation determines the subject matter of the right. In this respect, provision is made for excluding private transactions between private individuals from its scope. Subject to the right shall be resale by public officers, auction houses, galleries or other commercial agents. It is suggested that royalties shall be payable on any transaction involving transfer of ownership of works apart from the first sale. Royalties should be payable on the sale price. In order to ascertain its effectiveness the artist's resale right shall be inalienable and unwaivable.

Works of applied art excluded

The proposal sets out to harmonise the categories of original works subject to the right: manuscripts, pictures, collages, paintings, drawings, engravings, prints, lithographs, sculptures, tapestries, ceramics and photographic works. Works of applied art are excluded. An application threshold of a sale price of ECU 1,000 shall be set. Member States would have an option to apply "droit de suite" from a threshold lower than the Community threshold.

The Commission considers it would be appropriate to provide for a tapering scale of rates of royalty based on three price bands. The basic rate would be set at 4 % of the sale price net of tax, the intermediate one at 3 % and the upper one at 2 %. Member States would be free to determine the procedures for collecting and managing the right. Rightholders would enjoy a right to obtain any information that may be necessary in order to secure payment of sums payable under the resale right. Enjoyment of "droit de suite" would be restricted to EU nationals and foreign authors whose countries afford such protection (reciprocal treatment) to Community authors.

The Current Consultation Exercise

The Objective

The Internal Market legislation described above constitutes the basis for all additional and complementary initiatives which might be required in order to address issues resulting from the emergence of the phenomenon of the "information society".

As a response to similar consultation documents published by the authorities of various countries and with a view to harmonising the different approaches at EU and international level, the European Commission published on 19 July 1995 its

20 For a comparative law study concerning the situation prior to the Commission proposal cf. Pierredon-Fawcett, The Droit de Suite in Literary and Artistic Property, New York 1991.

Green Paper on "Copyright and Related Rights in the Information Society".[21] The Green Paper had been preceded by a questionnaire on "Intellectual property in the Information Society" and was based upon observations made by interested parties[22] at a preliminary hearing which took place in Brussels on July 7 and 8 1994.

With this document the Commission intended to consult extensively interested circles, associations and authorities on the challenges to copyright and related rights which are brought about by the new technologies of the information age.

More than 350 submissions

Participants in the consultation process were requested to submit statements and suggestions in relation to nine different topics by 31 October 1995. In response, the Commission has received more than 350 submissions dealing with the issues which were identified in the Green Paper.

The conclusions of the consultation process are set out in an up-to-date "Follow-up to the Green Paper". This communication from the Commission identifies a number of issues requiring immediate action in order to eliminate significant barriers to trade in copyright goods and services and/or distortions of competition between Member States. Furthermore, it is concluded that other issues equally fundamental to the exploitation of intellectual property in the information society necessitate further consideration and/or action before concrete policy proposals can be made.

The Hearing of July 1994

As mentioned above, the European Commission's first phase of the consultation process on the copyright and related rights aspects of the information society started with a hearing in July 1994.

The hearing confirmed the first impression of the Commission services that the new technological environment does not ask for radical changes of the existing regulatory framework. The establishment of the information society is an evolutionary and dynamic process which is far from being completed. It appears that there is no need for intellectual property rules which are technologically specific. Many interested parties indicated that national, Community and international intellectual property right provisions could be adapted to adequately cover the new acts of transmission. However, it was felt that the need to agree on comparable standards of intellectual property protection has substantially risen.

The 1995 Green Paper – Issues Deserving Priority Attention

Based upon the *acquis communautaire* the consultation exercise set out to identify the need for legislative action in order to avoid that the development of new services be hampered by fragmented markets or by the absence of an appropriate level of protection.

The Green Paper consists of two chapters.[23] In Chapter one, the reasons for its need were explained, the issues at stake identified and a short description of the

21 COM(95)382 final, 19.7.1995.
22 See Replies from Interested Parties on "Copyright and neighbouring rights in the Information Society", Brussels/Luxembourg 1995
23 For details Gaster, Copyright and Related Rights in the Information Society, in: Proceedings of the SOFTIC Symposium 1995 on Problems of Intellectual Property Rights in the Context of Information Networks, Tokyo 1995, pp. 227 et seq. See also von Lewinski, Das europäische Grünbuch über das Urheberrecht und neue Technologien, GRUR Int. 1995, pp. 831 et seq.

"New methods of creation arising from digitalisation do not call substantially into question traditional methods of rights management."

existing legal framework in the European Union given. In addition, a number of preliminary questions were raised. In Chapter two, a rather detailed study was carried out of the possible implications of new technologies for the systems of copyright and related rights, discussing nine issues:

Possible implications of new technologies: nine issues

- two general topics :
  - the determination of the applicable law and
  - the exhaustion principle (parallel imports);
- several specific rights :
  - a digital reproduction right;
  - communication to the public;
  - a digital transmission right;
  - a digital broadcasting right;
  - and the issue of moral rights; and last but not least
- two issues on the exploitation of rights :
  - the acquisition /administration of rights
  - technical systems of identification and protection.

With regard to each area examined, a number of specific questions were raised.

The Hearing of January 1996

The importance of technical systems for identifying and protecting copyrighted works and other protected matter, as well as the need to rationalise the management of the rights within the framework of the information society was recognised by interested parties at a hearing organised by the Commission in Brussels on 8 and 9 January 1996. The hearing which focused on two specific chapters of the Green Paper was attended by more than 250 representatives of rightholders, industry, users, relevant international organisations, the EU Member States and various third countries. Various initiatives concerning the identification, protection and electronic management of the relevant rights were presented during the hearing.

The aim is to achieve single standards recognised worldwide

The vast majority of the participants agreed that these technical initiatives should be developed on a voluntary basis and be guided by market considerations. There was also agreement that the standardisation process should aim to achieve single standards recognised worldwide. Once these technical systems have been developed, legislative measures to protect their integrity should be adopted, indicated the participants. Sanctions for neutralising, violating or manipulating these systems should be established at the Community level.

With regard to acquisition and management of rights, the participants agreed that new methods of creation arising from digitalisation do not call substantially into question traditional methods of rights management, but that interested parties should attempt to rationalise these methods where possible. In this respect, attempts to simplify and regroup the management of these rights are underway in several Member States.

The Florence Conference

The consultation process was concluded by an International Conference on "Copyright and Related Rights on the Threshold of the 21st Century," which took place in Florence, Italy, from June 2 to 4, 1996. The Conference discussed the preliminary results of the consultation, and established together with the written submissions the need for further Community legislation. The conclusions of the debate[24] were the following:

- Protection of IPR is key to added value and competitiveness in, for example, the entertainment and information sectors.
- Within the Single Market framework clear, harmonised rules should be established to protect the creation, production and dissemination of works and other subject matter in Europe, while balancing the rights and interests of different categories of right holders and users.
- No new concepts of IPR protection are needed to achieve the benefits which the new technological environment of the information society can provide. The substantive body of copyright law is still relevant, including rights of reproduction, communication to the public and authorisation of distribution.
- While the quality of digital copying and transmission and the open nature of networks facilitate copyright infringements, digitisation and interactivity present new opportunities for identification and controlling the exploitation of protected subject matter. The enforcement and management of rights therefore deserve particular attention.
- As the information society's electronic environment is not bound by national frontiers, any harmonisation at EC level must take place in parallel with the establishment of appropriate minimum standards of protection elsewhere, in particular under the auspices of WIPO.

The 1996 Follow-up to the Green Paper

Need for further harmonising efforts

The communication on the "Follow-up to the Green Paper on Copyright and Related Rights in the Information Society" of November 1996[25] concludes that the consultation of interested parties has confirmed the need for further harmonising efforts, action that needs to be undertaken within the Single Market framework and be consistent with existing concepts and traditions. Such initiatives should not imply radical changes to the existing regulatory framework.

Legislative action needs to adjust and/or complement the existing legal framework, where this is necessary for the proper functioning of the Internal Market and needs to bring about a favourable environment which protects and stimulates creativity and innovative activities across EU Member States. Europe's traditionally high level of copyright protection must be maintained and further developed. At the same time, a fair balance of rights and interests between the different categories of rightholders and between rightholders and users must be ensured.

24 See also the conclusions by Heinz Zourek, Deputy Director General of the European Commission's Department for Internal Market and Financial Services, in: Proceedings of the International Conference on "Copyright and Related Rights on the Threshold of the 21st Century, Firenze, Italy – June 2, 3, 4, 1996", Brussels 1996, pp. 117 et seq.

25 Communication from the Commission "Follow-up to the Green Paper on Copyright and Related Rights in the Information Society", Doc. COM (96) 568 final, 20.11.1996.

Towards this end the communication announces that proposals will be presented shortly in respect of:

- The reproduction right. Harmonised measures will be proposed in order to define the scope of the acts subject to the reproduction right, including limitations to it, in so far as Community legislation is not yet in place.
- The communication to the public right, including the making available to the public of works in such a way that members of the public may access these works from a place and at a time individually chosen by them. Harmonisation would also have to deal with the limitations applicable to the right.
- The legal protection of the integrity of technical identification and protection schemes. Harmonisation in this field may to some extent be dependent upon the outcome of WIPO negotiations.
- The distribution right. Harmonisation would cover all categories of copyright works (at present the right is only harmonised in respect of computer programmes and database structures). EC legislation would (re-)affirm that exhaustion applies only to the distribution of goods and not to the provision of services, e. g. on-line services.

Digital broadcasting right not yet in the list of first priorities

Other issues such as a digital broadcasting right, conflict of laws in cyberspace and law enforcement, management of rights and moral rights are not (yet) included in the list of first priorities. According to the Commission, such issues still require additional study or evaluation.

The WIPO Process and the Need for International Solutions

Needless to say, a response from the European Union to the new technological challenges is not sufficient. The information society is by its nature global, and thus, as regards many of the issues, it requires global answers. The networks transporting information, works, data, etc. will easily cover several countries, if not continents. Imposing national borders to the acts of "digital transmission" would prove to be an extremely difficult task. Therefore, in addition to the harmonisation of copyrights and related rights at the European level solutions must also be sought in an international context. Such goals have now been achieved by a diplomatic conference which was convened by the World Intellectual Property Organisation in December 1996. On 20 December 1996 the conference adopted a new WIPO Copyright Treaty and a WIPO Performances and Phonograms Treaty. A third treaty on intellectual property in respect of databases will be considered later on.

Two new WIPO treaties adopted in Geneva

Concluding Remarks

1. An important degree of harmonisation of legislation providing for a high level of protection for authors and neighbouring rightholders has already been achieved in the European Union.

2. The subject of copyright and neighbouring rights in the information society has been reviewed through a very comprehensive consultation exercise recently undertaken by the European Commission. The concluding "Follow-up to the Green Paper" identified the need for specific new initiatives and sets out the Commission's working programme in the field of copyright and related rights for the years to come.

Multilateral negotiations have led to the adoption of new treaties which adapt the traditional international copyright and related rights system to the new challenges of the information society.

Ulrich Wattenberg

State Intervention – The Japanese Experience

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"From the heights of rapid economic growth in the mid-sixties, Japan began to look ahead and made efforts to understand future trends in technology, economy and society. ... From the beginning, there were several views on the Japanese road to the post-industrial society, but they were unified by the term 'johoka shakai', coined apparently by Y. Hayashi. Johoka shakai can be translated in many ways, e.g. as 'informatised society' or 'information-oriented society'. Hayashi actually defined the term johoka ('informatised') as the important quality of products and services, their 'appeal' above their expected functionality."

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State Intervention – The Japanese Experience

Ulrich Wattenberg

Introduction

The provision and use of information depends on the political and social structure of a country; Japan's political structure changed to quite an extent after World War II. It showed some continuity in retaining the Emperor and the basic system of a strong central government above 47 departments. But to ensure a democratic process of decision making and to restrict interference of the government with basic rights as intellectual freedom, changes took place within the government. In 1947 the Ministry of Interior was dissolved and its functions distributed among several governmental bodies. In 1949 the Ministry of Communication (established in 1895) was split up into a Ministry of Post and a Ministry of Telecommunication. In 1952 both ministries were merged again (MPT), but at the same time telecommunication business was brought into a separate organisation: NTT (Nippon Telegraph and Telephone) was established as a "public corporation". And some months later, a separate organisation was established for international telecommunication, KDD (Kokusai Denshin Denwa).

In broadcasting, Japan in 1950 adopted a dual system of public and private broadcasting. The Nippon Hoso Kyokai (NHK), originally established in 1926, went on as a parliament-controlled, user-fee based organisation with nationwide responsibilities. On the other hand, private companies were allowed to enter the broadcasting business. In principle, private broadcasting is restricted to a single prefecture, except in urban areas around Tokyo and Osaka, where the adjacent prefectures are served by the same company.

The Ministry of International Trade and Industry (MITI) promoted computer technology in a very effective way, relying on five major companies and several others. Governmental research was also pursued in research facilities such as the Electrotechnical Laboratory, established a hundred years ago, and others. When data processing led to more and more data communication, MITI advocated the liberalisation of telecommunication, not always in harmony with the policy of MPT.

Most influential : the Science and Technology Agency

Besides MPT and MITI, a third governmental body has to be mentioned, the Science and Technology Agency (STA), a quasi-ministry within the Prime Minister's Office. It was established in 1956 to promote research and development of atomic energy, but later its spectrum was broadened, not only by taking up other large-scale research such as air and space or ocean technology, but also by taking care of the Institute for Physical and Chemical Research and other R&D establishments, sometimes in conflict with the Ministry of Education, Science and Culture. It is of interest that the foundation of STA is related to the "Group of Seven Ministries' Engineers", which was organised before WWII by Dr. Shigeyoshi Matsumae (1901-1991), who was the first engineer to become director general of a bureau within the Ministry of Communication in 1941. In fact this was the first time within the whole government, where persons with a background in law had

a monopoly. After the war Matsumae and his friends advocated a stronger position of the government in technology matters and supported the foundation of the STA and some of the group took positions there. Matsumae himself later became president of the (private) Tokai University in 1967, which was soon identified with his charismatic character. Another prominent figure in the circle around Matsumae was S. Yonezawa, the first president of NTT. He organised the "Japan Techno-Economic Society" (JATES) in 1966 to bring together R&D people from industry. A study group of JATES, the "Future Research Operational Group" FROG recommended the establishment of a think tank, a proposal which led to the foundation of the "Institute for Future Technology" IFTECH. So telecommunication administration was influential even outside its own business in contributing to the establishment of Japanese public R&D administration in general, and even today engineers from NTT play a significant role in the general Japanese scientific world. STA is of relevance not just for historical reasons but directly in communication, because it is in charge of the national air and space development programme which includes satellites.

Formulating the "Information-oriented Society"

From the heights of rapid economic growth in the mid-sixties, Japan began to look ahead and made efforts to understand future trends in technology, economy and society. Starting with ideas put down in the USA by Kenneth Boulding, Fritz Machlup and especially Daniel Bell on the "post-industrial society", in Japan Tadao Umesao, Yujiro Hayashi, Reikichi Shirane, Seizuke Komatsuzaki and other thinkers discussed the future Japanese society. From the beginning, there were several views on the Japanese road to the post-industrial society, but they were unified by the term "johoka shakai", coined apparently by Y. Hayashi. Johoka shakai can be translated in many ways, e.g. as "informatised society" or "information-oriented society". Hayashi actually defined the term johoka ("informatised") as the important quality of products and services, their "appeal" above their expected functionality. A narrower view emphasised the fact that data processing and telecommunications were merging, opening up new opportunities. All these views led to the offering of advice: towards the industry concerning the products and services of the future, when everybody would own a telephone, a colour TV, a car; to the government, to promote emerging information technologies for the benefit of the society.

Consenting advice: promote emerging information technologies

A detailed proposal how to promote the information-oriented society can be found in a paper "The Plan for Information Society: A national goal towards the year 2000". It was published in 1972 by the MITI related Computer Usage Development Institute with its director Yoneiji Masuda as a leading figure. The plan proposed a short term (five-year) agenda for immediate actions and a long term (ten-year) one for further steps. The five-year plan proposed a computerised city "Computopolis", applications in health care, education and environmental issues

"The Japanese government did not adopt the grand proposals of the Plan for Information Society."

etc. Even a "Computer Peace Corps" aiming at Third World Countries was advocated. The budget was calculated as more than $ 3,000 million. The long term plan (1976-1985) had a scale of $ 65,000 million. It included among others measures to eliminate the problems of computerisation. Masuda asked for strong governmental leadership in implementing the plan, as market forces alone would be too slow to trigger this off.

Government Activities

Competing field trials for cable and optical fibre in 1973 and 1976

The Japanese government did not adopt these grand proposals, but nevertheless promoted some of the ideas discussed. Upgrading TV in 30 million private households by introducing two-way cable TV seemed to be a good way of testing new services and new equipment while promoting participatory aspects of the information-oriented society. MPT and MITI rushed to set up organisations to plan quite similar field trials, a clear sign of the competition between both ministries. In 1973 both organisations merged formally, but in fact remained independent. The MPT-related project started its field trials in 1973 in "Tama New Town" near Tokyo under the name TAMA CCIS (Coaxial Cable Information System). The MITI plans for similar experiments at Higashi-Ikoma near Osaka were delayed by the oil shock at the end of 1973, when MITI funding had to be focused on energy-securing topics. MITI decided to switch to optical fibre technology and started the field trials in 1976 under the name "Higashi Ikoma Optical Visual Information System" HI-OVIS. Both tests were run over several years, their technical feasibility was demonstrated, but their immediate impact was small. The Japanese government did not see the need to provide a coaxial cable system in order to promote this type of CATV, and private companies stayed with simple broadcasting technology.

CATV is regulated in Japan in the following way: systems with up to 50 receivers are free, up to 500 receivers MPT must be notified, and systems exceeding 500 receivers need a permit. CATV developed slowly in Japan in comparison to the USA and to Europe. These systems serve mostly rural areas, even large companies have less than 500 subscribers. The systems are engaged in retransmission of broadcasting, and original programmes are very limited. In 1990 there were 238 systems with more than 500 subscribers, with substantial own programmes with just 1 million subscribers. Since the late eighties so called "city type" CATV systems have emerged, which offer more than 30 channels and extra services. Here department stores and private railway companies are involved and in 1994, 170 stations served 2 million subscribers.

Japanese writing a challenge for information processing ...

The development of a videotext system, promoted by the MPT and in Japan dubbed CAPTAIN (Character and Pattern Information Network), had to solve problems related to the writing system with its complex and numerous characters. This led to a transmission standard on a pixel-based standard in contrast to the

European block-mode and the North-American vector-mode standard. This pixel mode was a burden in transmission and made high resolution graphics possible. Field tests began in December 1979, CAPTAIN was introduced (after a wait-and-see period) on a commercial basis in 1984. Its acceptance as an information-tool was as low as in Europe, but it is still used as a specialised information system with a high end version "HI-CAPTAIN" on an ISDN basis. NTT at that time favoured its own development, the "Video Response System" VRS. This system requires a broadband communication network, which was not available at that time, but which shows that NTT was already thinking of the next steps.

Japan was an early advocate of digitisation of telephone lines and set up tests under the name ISN (Information System Network), which featured one 64 Kbit channel and a 16 Kbit channel for cost reasons. Later it adopted the international ISDN standard with 2 64-Kbit channels. Field tests were run at Mita city in the outskirts of the Tokyo Metropolitan Area.

... and later the basis for world-wide display and printing technology leadership

MITI did its business in promoting the "Pattern Information Processing System" (PIPS) project from 1971-1980, a joint project of public and private R&D. There were no spectacular results at the end, but the project laid the foundation of display- and printing technology, fields dominated today by Japanese companies. MITI did start a spectacular project in 1982, when the development of a prototype of a "Fifth Generation Computer" was announced. With the "Institute of New Computer Technology" ICOT as the central organisation, the ten-year project tackled the development of hard- and software for computers to be used not just as faster "number crunchers" but as "thinking machines", which would make possible expert systems, machine translation of natural language etc. Prototypes of such machines were built, but their impact on commercial computing was very small. This was not a drawback to the Japanese, as all over the world "traditional" computing, in spite of its shortcomings in computer architecture and programming models, proved to be still the best solution when all economical factors were taken into account.

Within the framework of STA several lines of satellites were developed, among them communication satellites (C-series) and broadcasting satellites (B-series). Rocket technology was first imported from the US, but from the end of the eighties genuine Japan-made rockets, the H-I and H-II series, were put into service. Development of broadcasting satellites started in 1973, in 1977 Japan got 8 channels within WARC for geostationary satellites at 110 degrees East. In 1978 the first satellite "BS" was delivered to a geostationary position by an American rocket. With a specially formed reflector, not only the main islands but also remote archipelagoes like the Ogasawara islands, 1000 km to the south, could be reached while keeping "overspilling" into neighbouring countries to a minimum. Regular service was started in 1984 with the BS-2, put into orbit with its own development the NII rocket. So Japan became the first nation with direct broadcasting. The BS-2 had just two channels, so they were assigned to NHK for its two networks. The

"People have to be encouraged to stay in the countryside."

follow-up, the BS-3, is equipped with three channels, one for the joint use of the commercial broadcasters.

Broadcasting satellites were used from the beginning for test transmissions of High Definition TV programmes. The HDTV technology was developed by the NHK Research Laboratory together with Japanese industry from the end of the seventies. The system was ready in the mid-eighties, but it was a development ahead of its time. The US and Europe were not willing to take over the standard developed by the Japanese. Now in the mid-nineties digital TV is expected to take over, so what to do with the analogue MUSE system? Japan shows some stubbornness and is still promoting it. In November 1991 the High Vision Promotion Society was established; the opening ceremony of regular programmes was on November 25th, which hence became "High Vision Memorial Day". MPT set up a promotion programme by designating model High-Vision-Cities and providing interest-free loans for potential users. In 1995 there were 38 areas all over Japan. Of these, 33 areas (71 cities) have already introduced HDTV. From November 1991 up to November 1994 nearly 10,000 hours were broadcast over 1,100 days with sports taking a third of the time, music, movies and documentaries taking the rest. Meanwhile commercial broadcasters were also participating, so broadcasting hours (daily 13:00 to 23:00 hours) were shared between NHK and private broadcasters.

Satellites as an instrument for rural development

Satellite technology covers the whole of Japan at once, to promote regional use of information systems and information. Several ministries within the government have set up special programmes. There is an urgent need to do this: people have to be encouraged to stay in the countryside or to go back to it after graduation from college or university in order to ease the congestion in and around big cities. In the mid-eighties several ministries started promotional activities under fine-sounding names such as "Greentopia" (Ministry of Forestry, Fishery and Agriculture) or "Information Terminal" (Ministry of Transport). But only two plans remain active, the "New Media Community" (MITI) and especially the "Teletopia" projects under the MPT. The idea behind all these projects is to raise the economic and social level in smaller towns and rural areas. The main instruments on the MPT side are videotext and CATV, database systems etc. Step-by-step model cities were selected and non-profit organisations were established which started planning with governmental help. Within the Teletopia framework, about 130 cities were designated as model cities, 180 third sector companies were established. Governmental support comes in low-interest loans from the Japan Development Bank and others. Information systems process local information and keep contact with national information systems. The three existing "teleports" in Tokyo, Osaka and Yokohama are special cases which keep contact with overseas information systems.

Besides these technical advances with varying results, the government was and is very successful in promoting the general idea of an information-oriented

society. The "Month of Information", October, is filled every year with exhibitions, lectures etc. on various levels from special workshops of experts to events for everybody. These activities started as early as 1972 and do a good job in propagating the use of information-technology and services. Over the whole year the Government prepares (together with appropriate organisations) a whole series of annual white papers on computers, software, databases, computer auditing, new media, multi-media, telecommunication etc. These government publications are not given away gratis but are sold in the Government Publications Service Centre, its branches and in general bookshops. In 1995 the White Paper on Communications was sold out in spite of its price of about Yen 3,500 (about $35). This year's White Paper was also sold in CD-ROM edition. With its three parts "Status of Telecommunication", "Trends in Telecommunication Policy" and a special part "Revolution of the Telecommunication Market by the advance of Multimedia", it should find an equally broad readership.

A key ingredient for the Japanese case: government-led public campaigns

Deregulation of Telecommunications in 1985

While experimenting with information systems and promoting the computer industry, general discussion on administrative reforms began in 1981, with the privatisation of NTT as its topic. After three years of discussion and spurred on by the breaking up of AT&T, reforms in the telecommunication sector became effective in Japan from April 1st, 1985. NTT was not split up, but its monopoly was ended and competition was introduced. Under the new regulations, telecommunication companies could apply for a Type I Communication Carrier licence, which would allow them to build and maintain their own telecommunication lines and to offer services on them. Type II Communication Carriers would offer services on leased lines. In 1985 five "New Common Carriers" (NCCs), three with earthbound lines and two operating communication satellites, got licences to offer nation-wide services, and many more carriers got licences to serve dedicated regions. Among the NCCs, Japan Railways and the Japan Highway Company can be found as partners, offering their already installed lines. Cellular phone companies and companies offering paging services arose, and in 1995 some 126 companies were active in this category. Type II Communication Carriers are divided into Special Carriers, offering national and international services and General Carriers offering regional services, using lines leased from NTT or the above mentioned NCCs. Altogether 50 TYPE II Special Carriers and more than 3,000 TYPE II General Carriers were active in 1995. For international telephone communication, KDD lost its monopoly and has to share business with two other companies.

Policy not yet integrated

With deregulation, the organisation of the MPT changed accordingly. Three bureaus were newly formed: The Communication Policy Bureau, the Telecommunication Bureau and the Broadcasting Bureau. The long standing division between wire-bound communication and wireless communication ended, the

"NTT has reduced its staff from 300,000 to 200,000 over the years – but the reduction is partly due to the establishment of more than 130 subsiduaries."

differentiation between telecommunication and broadcasting, however, stayed in effect. The Minister of Post and Telecommunication is advised by the following councils

- Telecommunication Council (established 1982)
- Radio Regulatory Council (established 1952)
- Telecommunication Technology Council (established 1985)

These councils comprise representatives from industry, from the academic world and the general public. The largest and most important is the Telecommunication Council with its subcommittees. The members are nominated for two years, to ensure transparency. Since 1985 they have included two representatives of foreign companies: one American and one European, who are active in the telecommunication business in Japan. The four subcommittees working under the council are for CATV, telecommunication policy, telecommunication operations and for the field of data processing.

The first two councils mentioned above not only give advice on standards etc., but must be consulted on the issuing of licences to telecommunication or broadcasting companies.

Further Steps in 1995

In 1985 NTT, in spite of discussions concerning a break-up, entered the new era untouched, and a final decision on its status was postponed for five years. After discussions around 1990, the decision was postponed for another five years. Other problems also remained. The classification of telecommunication carriers into Type I and Type II reflects the way of thinking in the eighties, when offering communication lines and offering VAN services could be seen as two different businesses with a need for different regulations. Still another area of concern is that of full interconnectivity. NTT is obliged to admit the Type I Carriers to its local networks, but negotiations on the access fee and other details are up to NTT and the interested carrier. The MPT will set up a solution when negotiations fail, but this allows NTT at least to delay the agreement. In any case, many people are convinced that NTT's access terms are too high, based on too high operational expenses. NTT has countered these voices by reducing its staff from 300,000 to 200,000 over the years. But the reduction is partly due to the establishment of more than 130 subsiduaries.

Licensing policy is obscuring market forces

With regard to MPT, licensing policy is criticised because it tends to obscure general market forces. Type I Carriers need a licence to operate and it's up to the Ministry how many carriers are thought to be economically sound, leading to restricted competition. It is also not easy to take back a licence, a measure against sudden turbulence, if a carrier disappears.

At the end of January 1996 it was decided to improve the transparency of approval procedures for Type I telecommunication carriers by preparing better explanations. Also, field of service restrictions (international, national, long-distance, regional etc.) were abolished. Leaving the telecommunication business will also be made less complicated.

In February 1996, the Telecommunication Council finally made proposals concerning NTT and KDD. It proposed that NTT should be split up into three companies, one long-distance and two regional carriers. The target year for this event of change is 1998, but there will be other immediate steps. KDD, like NTT, is a company established by law and thus still distinct from its competitors. It is likely that this privilege of KDD will be abolished, because international telecommunication can be guaranteed otherwise.

Towards the Next Century

A Third Way

Japan, from the beginning of its modernisation in 1868, has always been under the strong influence of the USA. Nevertheless it tries to maintain a "third position", trying to keep up with the US way of minimal governmental interference and the European way of governmental regulations, which is close to the traditional Japanese position. Such cultural aspects will always render Japan unique. Anyway, deregulation will continue steadily in Japan.

A Sound Technological Base

Very early on, Japan formulated ideas specifying the future society as an information-oriented one. Several ministries acted in a typically Japanese way (of competition and cooperation) to promote the information society. Direct promotion activities were not too successful, but the government could spread the underlying ideas, and the information industry developed smoothly. Japan is now the only country besides the USA with a full range of native information technology, from embedded computers to supercomputers, from optical fibres to all kinds of peripherals. Japan is ready for digitisation of every kind of information including compression technologies. Digital TV from satellite has just started in Japan.

The Gamble with FTTH

The "information highway" slogan made its impression on Japan. MITI and MPT took it up and "Fibre to the Home" is again on the agenda, planned to be completed in the year 2010. As a first step, cities with governmental bodies and research facilities will be connected by the year 2000, serving 20% of the population. As a second step, all cities with more than 100,000 inhabitants will be connected by 2005, bringing the rate to 60%, until everybody is served in the year 2010. Looking back, NTT was rather reluctant to go ahead with these costly

investments, but the fear of allowing business opportunities to slip away, meant that plans were revised. Governmental funding is limited to interest-free loans.

Non-technical Aspects

The Japanese information society 30 years after

So telecommunication technology advances, but if we think of the high expectations for the information society 30 years ago – more direct democracy, more exchange of information within the local community – the development went a different way. Information technology became indispensable in factories and offices, whereas the non-professional user restricts himself to practical applications: saving time by using electronic transactions in shopping, banking etc. or using his mobile phone, leaving special use to the specialist.

By having access to a larger number of channels, the consumer is getting more entertainment. How much more sophisticated information-on-demand will be paid for in Japan remains to be seen. In contrast to the sparsely populated US, the Japanese enjoy and find much live entertainment in their neighbourhood, singing "karaoke" style at the bar, where highly sophisticated laser disk drives are rotating. And after enjoying this, the Japanese can pick up a video-tape in a 24-hour shop on the way home.

Mixed Feelings

If we look at the economic figures in Japan it turns out that only few branches could expand their business: the Type I Telecommunication carrier and energy companies. Electrical/electronic manufactures increased turnover, broadcasting was on the looser side. By putting all the information together, we get a mixed picture of the future. Not everything will transform into information: there will always be a need for a nationwide physical transportation system etc. and appropriate investments in those areas. This means there will never be enough funds to realise everything, neither in the public nor in the private sector. Politicians and consumers will always have to make choices.

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Regulation in the USA – Lessons for Europe?

"The advisory commission's message was clear: considering the prevailing confusion that existed in communication policy regarding media 'players' and media regulation, the advisory commission recommended further centralisation of the regulatory process."

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Outlining the Challenge

The advisory commission's message was clear: considering the prevailing confusion that existed in communication policy regarding media "players" and media regulation, the advisory commission recommended further centralisation of the regulatory process. This sounds very up to date, knowing of the recent debates about legislation in the fields of telecommunications, multi-media and broadcasting on both regional and national level. However, the advisory commission did not analyse the current situation in Europe, but had been appointed by the American President Franklin D. Roosevelt in order to investigate the situation in the United States in the early 1930s.

1934 act established the Federal Communications Commission (FCC)

Roosevelt referred the report to Congress, which – only four months later – passed the 1934 Federal Communications Act (FCA). Its contents largely reflected what had been proposed by the advisory commission. The Act, which in many ways was modelled on railway legislation, regulated telephone communication and radio broadcasting. Moreover, it established the Federal Communications Commission (FCC), a national authority with responsibility for all regulation involving media and telecommunications.

This integrative policy approach seemed the most sensible at the time because the various constituents in communication technology and the communication industry were then relatively closely interwoven. The telephone monopoly AT&T, for example, was experimenting for years trying to invent and establish a kind of pay-radio modelled on pay-phones. Only later did AT&T decide to concentrate on programme distribution via their telephone networks. Although the number of influential media players grew significantly over the decades, which was largely the result of a further segmentation of the media system (one only needs to consider the cable and satellite networks), a solid basis had been laid with the establishment of the FCA. It resulted in an integrative approach towards and understanding of communication policy, involving both telecommunications as well as other media.

Integrative approach

What has been outlined above is still of major importance today. The advent of digital technology in the telecommunications sector has made the traditional groupings redundant. Before too long, broad-band information highways will integrate various services which, for the time being, are still distributed separately via telephone, cable and terrestrial networks. We witness the merging of formerly separate communication industries such as broadcast media, telecommunications, electronic games and computers.

"The prerequisites for extensive deregulation were comparatively favourable in the United States."

Deregulation and Re-Regulation: The 1996 US Telecommunications Act

In the early 1990s, and with the above developments in mind, there were calls from the industry circles concerned demanding a significant overhaul of communication legislation which had been in place for around 60 years by then. This was taken up by the newly-elected Clinton administration (which had received substantial funds for their election campaign from the communication industry) and resulted in the Democratsy extraordinary National Information Infrastructure (NII) Initiative from 1993 onwards. It triggered off moreover a broad debate about issues of communication policy. The ultimate goal was to pass a new communications act.

Broad consensus on private financing of the communication infrastructure

There existed a fairly broad consensus amongst the main participants involved in formulating the act and the direction in which policy was to head. Democrats, Republicans and representatives of the communication industry all agreed that creating and expanding the communication infrastructure was to be financed privately. Providing free access to the communication sector for all possible competitors as well as a "digital-free-for-all" policy was intended to create the necessary incentives for capital investment.

The prerequisites for extensive deregulation were comparatively favourable in the United States. The communication sector has always been privately financed. Public monopolies, for example in telecommunications, had never existed. The remaining commercial monopolies could be found on a regional and local level: they were regional telephone companies (Baby Bells) and cable operators. In return for guaranteeing them a dominant market position, the markets on which they operated were kept separate by means of regulation: while cable operators were not allowed to provide telephone services, regional telephone companies were forbidden to provide long-distance calls and other information services. Something else they were not to take up was the manufacturing of receiving equipment.

How to transform a regulated market into open competition

While there existed a consensus to remove these last remaining regulatory restrictions, a heated debate emerged concerning an adequate transformation from a regulated market to open competition on equal terms. In particular the various industries involved tried everything possible to ensure a favourable starting position in the opening communication market. To guarantee that, they did extensive lobbying and used PR techniques which, even in the US context, reached unprecedented heights. In particular the financially sound Baby Bells did this with quite some success. It was largely down to their influence that a first attempt to rewrite the act failed in the last days of the Democrat-run Congress in autumn 1994. Overall, consultations lasted for more than three years.

Nevertheless, on 8 February 1996 President Clinton signed the 1996 Telecommunications Act. Not surprisingly, the act was the result of many compromises.

The draft versions that had been passed in the House of Representatives and in the Senate (both were dominated by the Republicans after the 1994 Election) were even more deregulatory and industry-friendly than their forerunners of the 103rd Congress. An agreement was finally reached when the mediating Conference Committee settled for a combination of both versions from the House and the Senate. The result was a settlement acceptable to all participants. However, it must also be regarded as agreement on the lowest common denominator in communication policy terms.

Loosening of concentration regulation

Since the new act is rather loosely knit, it seems likely that the US communication landscape will return to the dark ages in the medium term. The basic message is "everyone against everybody else"! Competition is to take place on all markets that had previously been treated separately. Regional monopolies are as much a thing of the past as are cross-ownership restrictions. The new Telecommunications Act extends the upper ratings threshold for national TV stations by ten per cent to 35 per cent; ownership rules for national radio networks no longer apply.

However, it will take some time before the new Telecommunications Act will have removed all regulatory practices entirely. The regional telephone companies, for example, first have to comply with a competitive checklist before they can successfully apply for a licence to provide long-distance calls. One reason for having this checklist is to keep the entry requirements for competitors as low as possible. Looked at in its entirety, this new piece of legislation does not propagate a laissez faire attitude as radical as could have been expected considering earlier drafts that passed through the Republican-dominated Congress. On the contrary, it contains a number of re-regulatory elements. In particular, this involves universal service and its regulation, which has been kept comparatively detailed and flexible. A new board has even been established. The so-called Federal-State Joint Board consists of national and State representatives as well as one consumer representative. Its members' task is to advise the FCC on matters concerning universal service.

FCC position strenghtened

Something else the new act does is to strengthen the FCC's position. This is even more surprising if one considers that there had been calls from the Republican side to dissolve it altogether. At least until 1997 the FCC will play a key role when it comes to putting the 1996 Telecommunications Act into practice. The FCC has been given the task of formulating regulations in over 60 different areas. Since it can be assumed that the FCC's members have a self-interest in the Commission's survival, if only for their own sake, it seems likely that its members will make use of their strengthened position.

Even if the label suggests something different, the 1996 Telecommunications Act is neither a completely new piece of legislation, nor is it restricted to (de)regulation of the traditional constituents of the communication sector. It really is an overhaul – although extensive – of the FCA dating back to 1934. It picks up the FCA's central idea: the integration of communication policy. This early direction taken by the FCA proves to be a golden opportunity in the advent of the digital revolution.

"This (1934) direction taken by the FCA proves to be a golden opportunity in the advent of the digital revolution."

Old Answers to New Questions: Patchwork Policy in Germany

A look across the Atlantic makes the special situation in Germany evident. While everything in the United States seems to be well co-ordinated, the story in Germany is rather different. This concerns in particular the number of regulatory bodies and the layers of bureaucracy. The reason for this is primarily the following unique situation: in federal Germany, broadcasting is regulated on the *Länder*-level, while issues of telecommunications are decided on a federal State level (*Bund*).

Land (and *Länder*) refers to the state (and states) of the federal system in Germany, the central power being the *Bund*. All *Länder* passed Landesmediengesetze (state broadcasting laws) and created 15 Landesmedienanstalten (*Land* supervisory bodies) for their enforcement. All *Länder* came together to have basic rules for broadcasting written down in a Rundfunkstaatsvertrag (joint agreement of all *Länder*). Based on this Staatsvertrag a further body has been established, working on questions of public service broadcasting financing (KEF) and in 1997 a new one is being created that looks into matters of concentration (KEK). Broadcasting regulation is obviously highly fragmented in Germany.

The German telecommunications law, passed in summer 1996, will establish a regulatory body on the federal State level (*Bund*). It operates under the auspices of the Ministry of Economics and has responsibilities for the telecommunications sector which is just being opened up for competition. Moreover, there were further disputes between the *Länder* and the federal State (*Bund*) regarding the regulation of new communication services. But there are even more complications. The European Union, too, contributed its share of further regulations. Amongst others there are the EU's television directive "Television without Frontiers" and directives for the liberalisation of the telecommunications sector. What seems like over-regulation in some areas also has its exact counterpoints: satellites in orbit positions to serve Europe, for example, are under no effective control at all.

Germany ill-prepared for the convergence of the digital age

This list alone illuminates the fact that Germany seems ill-prepared for the convergence of the digital age. On the one hand, new regulatory boards are still being established under the outdated presumption that separate markets will exist in the future. On the other hand, it appears as if the legislators are keen to re-establish old lines of conflict, such as those between the federal State (*Bund*) and the *Länder* or those between different ministries. Above all, a large number of regulatory bodies, supplied with authority and responsibilities in particular sections only, will mean the following:

* more bureaucracy
* internal competition
* less effectiveness in regulation as a result of the above.

The Variety of Europe

The European Union has pushed ahead hard to liberalise telecommunications as well as broadcasting markets and issued a number of related reports and directives. But the system of Directorate Generals (DG) in the European Union is in itself organisationally split, sometimes based on complicated compromises between the member states, the European administration and individual commissioners. Three of the DG's deal directly with telecommunication and/or media matters, the DG III (Industry, Information Technology and Telecommunications), DG X (Information, Communication, Culture, Audiovisual) and DG XIII (Telecommunications, Information Market and Exploitation of Research). As the DG's assignments emphasise, DG III and XIII are mainly in charge of telecommunications, DG III more for the "software", DG XIII more for the "hardware" aspects. Jointly they are responsible for the Information Society Project, based on the Bangemann Report of 1994. The DG X is concentrating upon the directive "TV without Frontiers", MEDIA II and the 16 : 9 Action Plan.

Introduction and regulation of digital technologies is split between different authorities

This short overview clearly demonstrates that no single authority is acting on the introduction and regulation of digital technologies in Europe. Furthermore, since the above-mentioned directive "TV without Frontiers" of 1989 was established, the EC/EU has claimed final responsibility for the regulation of transborder television in Europe, but has left the enforcement to national regulatory authorities. As much of European TV-programming is of transnational character today, regulation has become increasingly difficult; certain fields like Direct-Broadcasting-Satellites (DBS, of the ASTRA and EUTELSAT-type) are not effectively regulated by any national or European authority. But DBS-transmission has become crucial for the introduction of digital television in Europe. In a similar way, national regulation exists one way or the other in all European states. We limit our analysis to some of the larger member states of the EU.

Britain

In Britain, the privatisation of British Telecom (BT) led to the establishment of the new supervisory body Office of Telecommunications (Oftel). It was established in 1984 and overviews the major players in telecommunications. Besides BT this is mainly Mercury. Regulation in the field of broadcasting remains separate. In 1990 the Independent Broadcasting Authority and the Cable Authority were replaced by the Independent Television Commission (ITC), an institution that is supposed to regulate commercial actors only at "arm's length". This body is responsible for all types of transmission, including terrestrial services, cable and satellite. For the commercial radio sector, which is mostly local, another new body was created: the Radio Authority.

France

In France, a decree of 1989 created the Direction de la Réglementation Générale (DRG). France Télécom, still a public corporation, is now working under the supervision of the Minister for Post and Telecommunication and is subject to the oversight of the DRG. For broadcasting three successive bodies

have been created: the Haute Autorité, starting in 1982; the Commission Nationale de la Communication et des Libertés, and since 1989 the Conseil Supérieure de l'Audiovisuel (CSA). The CSA, being entrusted with the preservation of pluralism of means of expression, is awarding operating licences for use of the different terrestrial channels in French television, as well as positions on French DB-satellites and for cable networks. It also issues the licences required for running radio stations. In France, we find the traditional separation of telecommunications and broadcasting regulation as it can be found in many European countries.

Italy

In Italy, media and telecommunications regulation are still separate, but the Supreme Court demanded an overhaul of present media legislation to be completed in 1996. The Prodi government has presented proposals to introduce a single communications authority that fashions itself on the American FCC and includes telecommunications and broadcasting. Similar to the FCC, it is proposed that the president of this independent body is to be appointed by the government, with eight further members being elected by Parliament. The authority is supposed to issue licences to broadcasters as well as to telecommunication networks. This is the only model that openly refers to the American example and is clearly prepared for the digital future of convergence. But it is still in the stage of being shaped, and the government is meeting strong opposition in Parliament where Berlusconi – for obvious reasons – is showing little interest in any effective regulation.

As could be expected, the European scene is extremely diverse. But the general impression is that the continent is not well prepared for the future. The German situation, based on a federal system with shared responsibilities on the federal and the Länder level, is clearly the most complicated and probably the most difficult to resolve in Europe.

Regulatory Body as Referee

The insight gained as early as 1934 by the advisory commission established under Roosevelt seems not to have arrived in Europe yet. Converging technologies and markets also require converging regulatory structures. The United States seems to be offering the right answer for the future with the FCC.

Yet America is also leading the way in another respect. Regulation in Europe is usually interpreted as a kind of high-level supervision of economic activity. The Anglo-American roots of the phrase however are of a rather different nature (the phrase is even part of the US constitution). It connotes in particular that the body responsible for regulation should balance the often differing interests of the sides involved. Consequently, the regulatory body becomes a sort of referee whose primary concern is to make decisions which are acceptable for society as a whole, rather than complying only with legal principles.

"In prescribing outdated market structures and with the predominance of legalistic thinking above all we are not well prepared for the future."

FCC constituted like a jury

That is also why the FCC has been constituted as a jury or a collegiate body that is working according to legal and public requirements, while not consisting of lawyers or people from the legal profession. Its members are constantly confronted with competitors for licences, competing branches of the communication sector, TV stations and viewers voicing their complaints. Certain rules and the requirement to be accountable ensure that all decisions are subject to public scrutiny.

Especially in the digital communication age with its governing economic principles it is necessary to speed up the decision-making process and come to solutions which can easily be inspected and challenged, if necessary. To name but one example: in Europe, the EC/EU has invested more than a billion ECUs trying to promote the introduction of High Definition Television (HDTV). It all rested on questionable technological design and was not in the interest of programme suppliers, who had made their disapproval clear. This kind of industrial policy, instigated from the top, turned out to be a complete failure. All developments involving HDTV came to an abrupt halt in 1992. In the United States, on the contrary, the FCC invited applications suggesting different technical solutions for the realisation of HDTV. Submitted suggestions were then tested and scrutinised by independent experts. After the tests had confirmed that a digital solution seemed possible, all interested parties participated in further joint research. Currently, HDTV is undergoing an experimental test phase in the US. Europe, the "early bird" as it had seemed earlier on, has lost the race for the introduction of a sound HDTV technology.

Conflicts are going to increase

Owing to the growing convergence, conflicts are on the increase in the digital age. To illustrate the significance, the following example that is currently under investigation by the FCC can serve as an indicator of the above assumption. The telephone industry is complaining that the Internet is being used increasingly for phoning. While telephone companies have to pay a certain levy, online providers are exempt from these payments. Readers are invited to come up with suggestions as to which regulatory body in Europe could (and would be entitled to) deal with this highly complex issue and find a satisfactory solution.

We have to be aware of the fact that our backwardness (when comparing our situation with that of the United States) is not only of a technological nature. Seen in its entirety, the technological infrastructure in Germany is even more modern and more capable than is the case in the United States. What we lack is an understanding of and a coming to terms with the far-reaching changes brought about by the digitalisation of all communication processes. In prescribing outdated market structures and with the predominance of legalistic thinking above all we are not well prepared for the future.

Axel Zerdick

The Road Ahead...

Afterthoughts

Having carefully read and edited the individual contributions to this report, having pondered over the facts and figures which we have extracted from the wealth of data available from many different sources, having considered and discussed many of the interesting and stimulating ideas, insights and analyses... what do we expect to happen? And more importantly, what do we want to happen, what do we want to work for in the future, putting forward our own visions, arguing for them and raising energy (and funds) to make them happen?

During our discussions in the Council, such visions – some individual ones, some shared between several individuals, some collectively – have come up once in a while. They had to be put aside for this time, because of our prime objective: evaluating and discussing key trends and issues in the communication field, and sharing them with those people in the industry who want to include those aspects and views from communication science into their own deliberations and debates. Ours has been an analytical task, not a prescriptive one.

This does not mean, however, that academics would totally abstain from having wishes and visions of their own. We are trained and expected to make clear distinctions between what we believe in and strive for as individuals and as citizens, and what we can analyse (or even prove) within the limits of our respective professions – but clear distinctions are different from limits of expression. In this sense, let me briefly share with you five elements of my personal outlook on the future of our communicative environment – some of them may differ in perception, others in the ideals behind them ... but they can – I feel they should – be part of our future debate.

A (Digital) Future for Television

The eventual end of television – as we know (and love) it – has been one of the intellectually (and maybe economically) most fascinating predictions (George Gilder 1994). The debate around this set of arguments has yet to catch on in Europe, and those who get into it can expect great rewards. However, do we really want to accept this argument, and willingly allow the withering of the essential story-telling, entertainment role of television, the wealth of information available on different channels, and the most economical form of both functions we have yet developed?

A misconception of the role of digital television seems to be prevailing, and it may lead to missing chances embodied in this technology. The digitalisation of television can entail three main changes. First, there is the significant enlargement of transmission capacities – to mainly discuss this possibility in terms of adding programmes of the types we know will not utilise the chances: there can and should be new kinds of content, new forms of access to existing archives, and new technical qualities of the television experience. Second, digitalisation allows integrated services, adding radio and data streams to be broadcast alongside television signals (via cable, satellite and terrestrial channels), and making available services of different degrees of interactivity and individualisation – the value added and, hence, the attractiveness of home shopping and home banking will be limited, but there are uncharted opportunities in a host of services combined around the needs connected to the private home. Third, digitalisation makes it easier to introduce forms of payment closer not only to the actual use, but also to differing preferences in television programmes as well as in interactive services – and there are chances of also funding new developments rather than of just cashing in on existing types of programmes.

Television hardware will have a new stage of development connected to digitalisation. We already can see (in some cases already buy) some of this, with digital improvements to conventional sound and picture quality, and the use of the television screen for Internet services – additional value to the television viewer could be created by other developments. Let us forget about "set-top boxes" (particularly in case there should be more than one of them) and work for digital decoders integrated into new television sets. Let us do away with extra stand-by satellite decoders, too – what we need are television sets that accept any type of signal input, and allow us to chose easily between programmes and services regardless of their transmission channel. And let us revive the idea of a much better television picture – high definition television deserves a new chance in the digital age: resolution-independent digital production of movie and television material will enlarge the number and quality of available content, there will be room in the digitally enhanced transmission spectrum, and finally there is no reason why (in a strange but marked difference to high fidelity audio equipment and even car stereos) the upper end of home television enjoyment is relatively limited.

The role of common standards for all these desirable developments is obvious, and if we do not want the delay and damage connected to prolonged exercises of futile and in many cases merely tactical competition, the issue of setting and regulating standards becomes unavoidable – and I suggest we carefully (and quickly) consider the US model for this case.

More than just the Internet

Some fascination with the Internet, and some illusions connected to its use and its development, are less a phenomenon of observation and analysis but one of media exposure and mass psychology. Having said this, however, there is a need to consider three aspects which in my view are essential to the future development of the kind of dedicated communication (in Ulrich Lange's words) made possible by interconnected interactive electronic services.

First, defragmentation of Internet content and Internet use will probably go on, and it should be deliberately supported. It will be positive if and when the established media (with their reputation and credibility for reliable selection and interpretation of information) and maybe some new services attract a higher status and more intensive attention and use in the new communication environment. In addition, defragmentation by new clusters of content organised according to specific functions and needs should be developed.

Second, reorganisation of the Internet is mandatory. In addition to the introduction of pricing mechanisms, the development of Intranets and that of regional networks as well as of an European Extranet with European content should be forcefully supported.

Third, the process of plurification of the traditional Internet (and some of its derivatives) should be actively supported. Reduplication of content on mirror sites will not only be necessary and useful to reduce traffic on the congested information highways. Like a new copy of a book in a different library, reduplicated content also creates a new context for this information – and copyright agreements should not hinder this essential function of the free flow of information.

A Society of Inclusion

There are two tendencies in some of the prevailing discussion which carry an unnecessary risk of the additional fragmentation of society: first, there is a fashionable concept of connecting future communication trends to future generations (and future generations only), and secondly some strange emphasis on the establishment of "virtual communities".

While it is true that some important elements of multimedia have been developed by young entrepreneurs, and while it is understandable that developers of the technology like to see their enthusiasm about its possibilities and the simple enjoyment of using it shared already by children, it is deplorable to watch the childish attempts of the generation which developed computers, digital transmission and (of course) even the Internet and the World Wide Web to appeal to the assumed tastes of the very young – they (and their preferences) will grow up, and we should admit to maturity. One economic benefit will be to recognise the market potential of the generation(s) above the age of 49, given up by most of the advertising indus-

try, prematurely, I think, particularly considering new types of products and services. A second chance lies within what in Japan is called the "silver market": in Europe, the number of people aged over 65 will grow by 11 million between 1995 and 2010, while the number of those below 15 will drop by 6 million. This process will allow multimedia providers to serve the interests and needs of the elderly more than before, combining socially desirable effects with entrepreneurial chances.

Our (justified) fascination with global connectivity and with the possibilities of modern communication for organising and maintaining communities has led to what I consider to be a misleading over-emphasis on virtual communities and virtual global villages. The processes of fragmentation of existing communities (from the personal to the regional to the national) are difficult enough to cope with in the real world – we do not need additional fragmentation by imagined virtual communities with their seduction to escape from the responsibilities of the communities that exist and which have to deal with real challenges and problems. Our efforts should rather be concentrated on strengthening and enhancing the role and the functioning of real communities by using available technologies and services – there are some good examples for this in Europe, they need support, and they should be taken as real models for the intelligent and beneficial use of virtualising technology.

Productivity and Employment

The issue of productivity and employment is closely connected to the society of inclusion. The threat of unemployment by increased productivity and by new technological possibilities for the international division of labour is a real, and – given the prevailing economic policies – immediate one. Two aspects, however, should be considered to put things into perspective.

First, particularly for the growth and employment argument, it has to be kept in mind that there is an unavoidable systematic bias ('systematic asymmetry' in my terms) in trying to balance negative and positive effects: chances for new jobs in new fields of activity are more difficult to predict than losses in mature industries. The important aspect here is that losses due to productivity gains are unavoidable, while the creation of new employment depends very much on the speed of introduction of new products and services.

Second, productivity gains in societies are generally not a threat, but a promise: more products for consumption (and there still are real needs even in European societies), less work and more time for personal and family desires – John Diebold's visions of 1948 about the automated factory which have socially enlightened a generation of engineering students still hold true. The political and economic challenge then is a different one: to organise the economic mechanism in such a way as to avoid (or compensate for) the loss of skills, the loss of social participation and the loss of faith.

Funding the Future of Communication

All developments in television and in interactive services have to be funded one way or the other – investment in infrastructure, content production and distribution will have to be decided on by commercial or public institutions, and in the end it is the individual in his or her role either as consumer and/or that of taxpayer who has to foot the bill(s). Compared to our present situation, the new communication environment will allow both a substantial increase in total investment (and spending) on communication (hardware and services) and a new distribution of cost between different consumers and within society as a whole. To discuss potential sources of funding, consider the varying effects of cost distribution on development in general and for specific segments of industries and of society, and to decide on funding mechanisms will be at the core of communication development in the public, corporate and individual spheres.

We probably agree on the new and important role of pricing, considering that both television and the Internet are still commonly perceived as basically free services. As we have mentioned, introducing and strengthening pricing mechanisms both in television and on the Internet will have three effects in economic terms. First, price differences will – as in other consumer-oriented industries – provide orientation and help decision-making thus probably leading to a reduction of information overload. Second, following the example of traditional media, some new services will be geared to providing screening and shielding functions (rather than additional content as such), thus creating new business opportunities. Third, the unavoidable exclusion of those people unable to pay can and should stimulate public debate on which television content, what kind of Internet access and which services on this system are crucial for the functioning of a democratic society.

We will have to discuss "universal service" regulations more than we have been used to previously, and we will have to decide if and to what extent local, state, federal and European institutions should finance multimedia infrastructure and use in education and for public access to what is offered in information as well as entertainment.

Our communication environments will be shaped and influenced by unexpected progress in technology, by brilliant new ideas for useful services and products, and by wise decisions on shaping the development within the framework of societal objectives. Our role will be to keep engaged in this debate, to put forward the results of analysis – and to keep in mind that we, too, are part of the future to be shaped.

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About Facts & Figures

With more than 200 graphics and tables on the history, situation and outlooks for European media, this appendix for the ECC Annual Report is designed to serve three different interests:

- It aims to serve business people, professional researchers and academics, politicians and consultants alike so that they can quickly retrieve relevant and current data from many different areas of the European media field. To this end, we submit the first broad collection of all media-related information available, from the TV industry to telecommunications, from consumer expenditure to Internet usage.
- The data have also been collected in order to give journalists, consultants or strategic planners a reliable compilation of sources for their articles and reports as well as their own forecasts.
- The Facts & Figures appendix was also designed to underline the statements and conclusions of the authors in this report with more European data.

By integrating Japanese and American figures we have tried to give the readers more opportunities to compare media developments in these economies with European trends. We have also tried to give data on historical developments as well as forecasts. By comparing more than one of these sources, the reader might sometimes appreciate the contradiction or the agreement of different data sources regarding a single topic.

This appendix might not be fully comprehensive and not completely free of faults, regardless of how much effort and care we have put in. However, we hope that you will find some illuminating data and information that you might be looking for.

1. The European Media Field

1.1 General Trends

1.1.1 The Changing Field of Communications

The environment of the media industry is changing rapidly. Technological convergence, deregulation, a slow down in economic growth and an aging population put the media under pressure to react.

	Current Issues/Long Term Trends	Conclusions for Media
Technology	* Convergence of technologies/ Digitisation * Decrease in processing costs/ Increase in processing capacities * Networks with higher data transmission capacities/Advanced compression standards	* Convergence of different media fields (Communications, Computing, Content) * More advanced digital content due to more capable technologies * Development of new means of content production and presentation for emerging new media
Regulations	* Telecoms deregulated * Cross-media ownerships eased * Intellectual property rights under revision * Privacy issues/Cryptography standards	* Convergence of regulations for different media * Decrease of telecommunication costs and better services * Development of (transnational) regulating tools for the Internet might occur
Economy	* Growth of 3 % per year * Rising unemployment * Ongoing rationalisation (also white-collar jobs)	* Only small steps possible to develop totally new markets * Rising purchasing power, but not in all segments of society
Demography	* Significantly ageing population * Professional lives of women * Individualisation of life (the one-person-household) and lifestyles * PC literacy of youths	* Media content (and advertising) to be designed especially for the needs of the elderly and singles * Rising electronic media literacy and competence of users * PC and Internet usage mainly concentrated on younger target groups

Sources

1.1.1 European Commission (1996): Electronic Publishing; ECC (1997)

After recovering from the recession in 1993 and the less than sufficient GDP-figures of 1996, Europe should be looking forward to 1997 with projected GDP growth rates of about 2.5 percent.

1.1.2 Comparison of Nominal and Real Growth Rates of GDP

Figures for 1996 and 1997 are forecasts; percentage change compared to previous year

	Real growth of GDP					Nominal growth of GDP				
	1993	1994	1995	1996	1997	1993	1994	1995	1996	1997
Austria	0.4	3.0	1.8	0.8	1.5	3.7	6.5	4.0	2.5	3.2
Belgium	-1.6	2.2	1.9	1.0	2.4	2.4	4.9	4.1	3.1	4.5
Denmark	1.5	4.4	2.6	1.1	2.7	2.2	6.1	4.3	3.6	5.6
Finland	-1.2	4.4	4.2	2.4	3.5	1.2	5.5	8.1	3.9	5.2
France	-1.3	2.8	2.2	1.0	2.4	1.1	4.4	3.9	2.8	3.7
Germany	-1.2	2.9	1.9	0.5	2.4	2.6	5.2	4.2	2.1	3.8
Greece	-1.0	1.5	2.0	2.2	2.3	12.9	12.4	11.5	9.9	8.8
Ireland	3.1	6.4	7.7	6.9	5.0	7.3	7.6	9.2	7.6	6.5
Italy	-1.2	2.2	3.0	1.7	2.3	3.1	5.9	8.0	6.1	5.5
Luxembourg	0	3.3	3.7	1.9	3.0	4.7	5.2	6.9	3.9	4.9
Netherlands	0.2	2.7	2.4	1.6	2.6	2.3	5.1	4.4	2.9	4.5
Portugal	-1.2	0,8	2.5	2.3	2.7	6.2	6.4	8.5	6.6	6.5
Spain	-1.2	2.1	3.0	2.3	2.7	3.1	6.1	7.9	5.7	5.7
Sweden	-2.2	2.6	3.0	1.3	2.0	0.3	5.5	7.2	2.9	4.8
UK	2.3	3.8	2.4	2.2	3.0	5.6	5.8	4.8	4.5	5.3
European Union	-0.5	2.8	2.5	1.4	2.5	3.1	5.6	5.5	3.9	4.7
Czech Republic	n/a	2.6	4.8	5.6	5.8	n/a	14.0	16.8	17.2	17.0
Norway	2.1	5.7	3.7	4.2	2.4	4.7	6.0	6.7	6.7	4.6
United States	2.2	3.5	2.0	2.3	2.0	4.9	5.8	4.5	4.4	4.3
Japan	0.1	0.5	0.9	2.2	2.4	0.8	0.8	0.3	1.9	2.7

Sources

1.1.2 OECD (1996)

1.1.3 General Media Related Data, 1994/1995

Country	Total number of population		Households (in 000s)		Inflation rate (in %)	
	1994	1995	1994	1995	1994	1995
Austria	7,795,788	8,029,717	3,030	3,013	3.0	2.2
Belgium	10,045,000	10,130,574	4,315	4,315	2.3	1.5
Denmark	5,180,600	5,215,000	2,339	2,339	1.2	2.2
Finland	5,078,000	5,117,000	2,145	2,141	0.8	1.0
France	55,027,300	58,265,352	22,398	23,010	1.6	2.1
Germany	81,410,000	81,642,000	32,830	33,470	3.0	1.8
Greece	10,420,000	10,512,000	3,340	3,800	10.9	9.3
Ireland	3,562,000	3,513,000	1,067	1,100	2.3	2.7
Italy	57,700,000	57,190,000	20,267	20,263	5.7	2.5
Luxembourg	400,900	412,600	145	155	2.2	1.9
Netherlands	15,341,533	15,424,122	6,350	6,510	2.7	2.0
Portugal	9,371,000	9,371,000	3,045	3,045	6.0	4.1
Spain	39,433,900	39,433,900	11,807	11,855	4.3	4.3
Sweden	8,745,100	8,745,109	4,140	4,131	3.3	1.4
UK	57,063,000	57,839,000	22,950	23,902	2.5	3.2
EU Total	366,570,000	370,840,000	140,141	143,049	n/a	n/a
Bulgaria	8,500,000	8,800,000	2,965	2,965	96.0	33.0
Czech Rep.	10,300,000	10,300,000	4,188	4,188	10.5	9.1
Hungary	10,260,800	10,190,000	3,873	3.940	19.0	28.8
Norway	4,324,577	4,348,410	1,769	1,769	4.4	1.5
Poland	38,590,000	38,588,000	12,020	12,020	29.5	21.6
Russia	148,000,000	148,300,000	45,300	46,400	230.0	140.0
Switzerland*	6,968,500	7,006,800	2,936	2,969	n/a	1.5
Ukraine	52,100,000	51,600,000	17,827	n/a	501.1	182.0
USA	249,280,000	264,557,000	97,060	98,610	2.2	2.4
Japan	125,150,000	125,569,000	43,666	44,240	0.7	-0.1

Advertisement spending per capita in the U.S. is three times as high as in most European countries. Thus, further growth appears possible in Europe.

Sources

1.1.3 IP-Group (1995), ECC calculations (1997)

* Advertisement spending per capita in Switzerland does not including direct marketing.

** Drops can be attributed to exchange fluctuations.

Subscription video services and the music industry are expected to enjoy the highest growth rates in the U.S. media industry till 1999 with compound annual growth figures between 8.3 and 9.4 percent.

1.1.4 Media Expenditure: Growth per Year in the U.S. 1990 - 1999

	Gross expenditure in $ millions	Annual growth rates in %					Gross expenditure in $ millions	Annual growth rates in %					Gross expenditure in $ millions	Compound annual growth (in %)	Compound annual growth (in %)
	1989	1990	1991	1992	1993	1994	1994	1995	1996	1997	1998	1999	1999	1989 - 1994	1995 - 1999
Television networks	9,360	5.0	3.3	7.5	-0.4	8.5	11,075	4.1	9.7	-0.4	6.7	4.1	14,000	3.4	4.8
Television stations	14,966	4.5	6.2	6.5	3.9	10.7	17,970	5.2	7.9	3.9	6.6	4.2	23,500	3.7	5.6
Television broadcasting	24,356	4.7	5.1	6.9	2.2	9.8	29,045	4.8	8.6	2.3	6.7	4.2	37,550	3.6	5.3
Radio networks	476	1.3	1.7	13.5	8.0	8.1	495	8.5	-5.0	6.9	3.7	6.2	600	0.8	3.9
Radio stations	7,847	5.1	3.1	3.1	9.3	8.9	9,800	9.4	6.3	7.3	5.4	8.0	13,905	4.5	7.2
Radio broadcasting	8,323	4.8	2.9	2.1	9.3	8.9	10,295	9.3	5.7	7.3	5.3	7.9	14,505	4.3	7.1
Basic services	9,136	19.2	13.8	11.1	13.3	0.1	15,590	7.6	9.8	6.7	6.4	5.8	22,135	11.3	7.3
Premium channels	5,045	4.5	3.0	1.0	6.4	8.8	5,261	8.8	9.5	9.0	8.5	7.8	7,985	0.8	8.7
Pay-per-view movies	77	27.3	40.8	33.3	32.0	22.3	297	24.2	39.5	25.1	25.4	30.1	1,049	31.0	28.7
Advertising	1,527	17.2	8.5	11.3	18.7	14.3	2,930	12.8	11.5	11.3	10.4	9.4	4,950	13.9	11.1
Subscription video services	15,785	14.3	8.5	8.6	9.3	3.6	24,078	8.7	10.4	8.1	7.8	7.3	36,119	8.8	8.34
Recorded music	6,580	14.6	3.9	15.2	11.3	20.1	12,068	11.8	5.4	9.9	10.4	9.7	18,916	12.9	9.4
Box office	5,033	0.2	4.4	1.4	5.8	4.7	5,396	0.8	-0.2	5.1	4.1	4.0	6,174	1.4	2.7
Home video	9,286	12.2	5.2	8.9	9.2	7.6	14,029	8.2	5.2	7.2	5.0	5.2	18,900	8.6	6.1
Television programmes	7,025	3.5	0.4	3.0	4.3	5.1	8,352	6.3	6.8	7.1	7.0	6.9	11,605	3.5	6.8
Barter syndication	1,008	10.0	13.0	9.3	15.0	10.1	1,735	8.1	7.2	6.5	5.6	5.1	2,375	11.5	6.5
Filmed entertainment	22,352	6.6.	2.1	5.7	7.4	6.9	29,512	6.3	4.8	6.8	5.5	5.5	39,054	5.7	5.8
Total expenditure	77,396	–	–	–	–	–	104,998	–	–	–	–	–	146,144	–	–

Sources

1.1.4 Veronis, Suhler & Associates; Wilkofsky Gruen Associates/The Hollywood Reporter, August 1995

1.2 Advertising in Europe

1.2.1 Advertising Spending per Year

Figures for 1996 are estimates

	GDP (in million US$)			advertising spending (in million US$)			GDP per capita (in US$)			ad. spending per capita (in US$)			percentage of ad. spending to GDP		
	1994	1995	1996	1994	1995	1996	1994	1995	1996	1994	1995	1996	1994	1995	1996
Belgium	241,839	239,626	245,138	1,419.1	1,502.8	1,610.7	23,944.5	23,855.0	24,403.6	140.70	149.50	159.90	0.59	0.63	0.66
Czech Rep.	37,005	40,004	41,924	308.2	348.8	393.9	3,592.5	3,884.4	4,070.3	29.48	33.80	37.70	0.83	0.87	0.94
France	1,425,194	1,414,452	1,435,669	9,224.6	9,343.1	9,652.5	25,047.3	24,375.0	24,741.6	162.14	161.20	166.40	0.65	0.66	0.67
Germany	2,145,478	2,123,062	2,165,524	19,759.6	19,731.4	20,260.5	26,912.6	26,078.0	26,600.6	247.90	241.80	248.30	0.92	0.93	0.93
Hungary	37,492	36,523	36,694	314.9	356.2	456.3	3,650.2	3,559.4	3,651.7	30.82	35.10	44.20	0.84	0.98	1.24
Italy	856,429	857,451	879,745	5,506.1	6,039.8	6,306.3	15,288.1	14,860.3	15,246.4	97.82	105.30	109.20	0.64	0.70	0.72
Luxembg.	11,757	11,805	12,207	100.5	76.7	80.6	29,392.9	29,447.6	30,448.6	250.58	189.80	200.20	0.85	0.65	0.66
Netherlands	364,631	364,359	373,468	2,966.8	3,188.9	3,396.9	24,166.9	23,749.7	24,343.8	196.98	208.00	221.00	0.81	0.87	0.91
Poland	92,084	95,503	101,234	511.9	655.2	746.2	2,378.5	2,475.2	2,623.4	13.40	16.90	19.50	0.56	0.69	0.74
Portugal	68,645	68,262	70,446	497.1	513.5	544.7	6,509.7	7,283.9	7,517.9	46.09	54.60	58.50	0.73	0.75	0.77
Slovakian R.	8,930	9,183	9,642	72.4	87.1	89.7	1,717.9	1,657.5	1,740.7	13.40	15.60	15.60	0.82	0.94	0.92
Spain	452,073	451,736	466,192	4,392.5	4,696.9	4,882.8	11,541.4	11,455.6	11,822.2	112.56	119.60	123.50	0.97	1.04	1.05
Switzerland	293,558	289,353	296,009	2,788.5	2,847	2,979.6	43,062.2	41,523.3	42,477.5	408.70	408.20	427.70	0.95	0.98	1.01
UK	885,919	882,680	903,864	9,394.7	9,640.8	10,342.8	15,822.7	15,468.7	15,839.2	167.50	169.00	180.70	1.06	1.09	1.14
USA	6,304,012	6,311,540	6,488,262	86,254.5	93,489.5	100,860.5	24,264.7	25,318.8	26,028.6	332.32	374.40	404.30	1.37	1.48	1.55
Japan	5,831,257	5,674,160	5,799,000	46,282.3	39,373.1	40,816.1	46,661.5	45,338.8	46,335.9	369.84	314.60	326.30	0.79	0.69	0.70

Sources:

1.2.1 IP-Group: Status Report (1995), (1996); ECC calculations (1997)
Note: The exchange rate in 1994 and 1995 was 1.34 US$ per ECU, in 1996 only 1.30 US$ per ECU. Hence the growth of the GDPs in ECU appears stronger than in US$.

1.2.2 Advertising Spending per Year and Market Shares

1994-1996; in million US$ and percent

		1994					1995					1996 (estimates)				
		Print	TV	Outdoor	Radio	Cinema	Print	TV	Outdoor	Radio	Cinema	Print	TV	Outdoor	Radio	Cinema
Belgium	US$	625.51	490.17	166.14	123.07	14.10	665.19	518.63	167.92	136.49	23.88	709.09	563.90	172.21	141.82	23.88
	%	44.1	34.5	11.7	8.7	1.0	44.3	34.2	11.0	9.0	1.6	44.0	35.0	10.7	8.8	1.5
Czech Rep.	US$	148.07	105.2	27.27	21.82	5.84	158.04	126.43	31.61	25.66	7.44	171.05	142.05	41.60	30.49	9.30
	%	48.0	34.1	8.8	7.1	1.9	45.3	36.2	9.1	7.3	2.1	43.4	36.0	10.5	7.7	2.4
France	US$	4,047.70	3,181.73	1,178.91	759.26	57.46	4,042.56	3,323.77	1,168.40	737.73	55.83	4,114.34	3,525.16	1,191.33	752.68	56.82
	%	43.9	34.5	12.8	8.2	0.6	43.3	35.6	12.5	7.9	0.6	42.7	36.6	12.4	7.8	0.6
Germany	US$	1,4021.5	4,077.94	638.85	822.11	128.21	1,3978.1	4,143.32	611.76	799.46	198.82	1,4237.4	4,369.25	629.84	815.45	208.56
	%	71.0	20.6	3.2	4.2	1.0	70.8	21.0	3.1	4.1	1.0	70.3	21.6	3.1	4.0	1.0
Hungary	US$	170.76	171.83	19.27	31.03	1.08	153.27	154.28	18.65	29.42	0.86	193.75	198.06	24.04	8.75	1.08
	%	43.3	43.6	4.9	7.9	0.3	43.0	43.3	5.2	8.3	0.2	42.5	43.5	5.3	8.5	0.2
Italy	US$	2,098.70	2,947.55	231.56	211.04	17.59	2,302.38	3,233.70	250.42	234.22	19.31	2,413.27	3,366.99	261.63	244.81	19.31
	%	38.1	53.5	4.2	3.8	0.3	38.1	53.5	4.1	3.9	0.3	38.3	53.4	4.1	3.9	0.3
Netherlands	US$	2,156.30	655.76	145.65	145.65	13.59	2,214.95	674.14	133.09	154.76	12.38	2,356.09	752.14	126.90	1,73.33	9.28
	%	69.2	21.0	4.7	4.7	0.4	69.4	21.1	4.2	4.9	0.4	69.4	21.5	3.7	5.1	0.3
Poland	US$	0,177	0.261	0.042	0.023	–	0.239	0.329	0.055	0.032	–	0.279	0.364	0.064	0.037	–
	%	35.1	51.8	8.4	4.7	–	36.5	50.2	8.5	4.8	–	37.5	48.8	8.7	5.0	–
Portugal	US$	136.46	300.20	30.70	31.73	–	135.31	314.09	31.08	33.96	–	142.57	334.0	31.68	36.30	–
	%	27.3	60.2	6.2	6.4	–	26.3	61.0	6.0	6.6	–	26.3	61.0	6.0	6.6	–
Slovakian	US$	31.35	26.93	6.66	6.90	0.70	32.24	30.08	6.98	7.31	0.83	37.23	27.26	5.98	8.64	0.66
Republic	%	43.2	37.1	9.2	9.5	1.0	41.6	38.8	9.0	9.4	1.1	46.7	34.2	7.5	10.8	0.8
Spain	US$	2,211.09	1,707.95	208.60	429.58	37.67	2,223.20	1,771.84	215.35	447.81	38.98	2,289.81	1,860.44	221.82	470.20	40.15
	%	48.1	37.2	4.5	9.3	0.8	47.3	37.7	4.6	9.5	0.8	46.9	38.1	4.5	9.6	0.8
Switzerland	US$	2,111.38	229.21	349.10	73.17	26.46	2,149.28	239.47	354.93	76.97	26.51	2,741.44	252.45	365.20	81.25	27.39
	%	75.7	8.2	12.5	2.6	0.9	75.5	8.4	12.5	2.7	0.9	75.7	8.4	12.3	2.7	0.9
UK	US$	4,471.45	3,916.31	558.33	350.95	84.55	4,491.88	4,051.41	585.76	420.59	91.76	4,787.06	4,335.88	630.12	492.47	97.88
	%	47.7	41.7	6.0	3.7	0.9	46.6	42.0	6.1	4.4	1.0	46.3	41.9	6.1	4.8	0.9
USA	US$	45,360	34,167	1,167	10,529	–	48,870	36,680	1260	11,500	–	48,350*	48,180**	–	**	–
	%	49.9	37.3	1.3	11.5	–	49.7	37.3	1.3	11.7	–	–	–	–	–	–
Japan	US$	17,524.4	19,613.5	4,720.89	2,423.34	–	15,012.2	16,899.8	5,425.72	2,035.88	–	15,545.8	17,848.6	5,346.66	2,075.41	–
	%	37.9	42.4	14.5	5.2	–	38.1	42.9	13.8	5.2	–	38.1	43.7	13.1	5.1	–

Sources

1.2.2 IP-Group: Status Report (1995), (1996); ECC calculations (1997)
Note: The data is based on exchange rates which may vary between 1995 and 1996. (1994 and 1995: 1 ECU = $1.34; 1996: 1 ECU = $1.30)
National data standards: *Belgium:* gross / excl. classifieds; *Czech Rep.:* Cinema data includes other outdoor advertising; *France:* excl. classifieds; *Germany:* net / incl. classifieds; *Hungary:* gross / incl. classifieds; *Italy:* net / excl. classifieds / including agency comission; *Luxembourgh:* gross / excl. classifieds; *Netherlands:* net / incl. classifieds; *Poland:* gross / excl. classifieds; *Portugal:* excl. classifieds; *Slovakian Rep.:* gross / excl. classifieds; *Spain:* gross / incl. classifieds; *Switzerland:* net of discount / including agency comissions / excluding classifieds; *UK:* gross / incl. agency comissions / excl. classifieds / excl. production costs (except outdoor and cinema advertising); *USA:* net / incl. classifieds / incl. agency comissions; *Japan:* gross / incl. classifieds

* Figure does not include specalised journals.
** Figure includes radio advertising, but excludes local cable TV advertising.

1.2.3 Press Display and Classified Advertising Expenditure

	1991	1992	1993	1994	1995
Press total advertising expenditure in million US$					
Austria	826	873	878	886	1,036
Belgium	645	739	723	705	874
Denmark	794	953	846	924	n/a
Finland	888	693	526	620	n/a
France	4,669	4,702	3,962	4,209	n/a
Germany	11,449	13,088	12,237	12,927	n/a
Greece	193	247	227	289	374
Ireland	265	308	281	289	335
Italy	3,117	3,309	1,915	1,927	2,000
Netherlands	2,059	2,170	1,995	2,161	n/a
Portugal	227	288	230	238	308
Spain	3,049	3,437	2,163	2,038	n/a
Sweden	1,510	1,507	1,066	1,182	n/a
UK	6,990	7,035	6,151	6,944	n/a
EU*	36,681	39,349	33,200	35,339	n/a
Norway	703	729	624	619	n/a
Switzerland	1,730	1,707	1,551	1,828	n/a
USA	37,838	38,801	40,523	43,367	n/a
Japan	12,206	12,214	13,318	13,622	15,119
Press total advertising expenditure per capita in US$					
Austria	105.7	110.8	109.8	109.3	126.2
Belgium	64.4	73.7	72.3	70.5	87.4
Denmark	154.1	184.3	163.0	177.3	n/a
Finland	177.4	137.5	103.8	121.8	n/a
France	81.8	82.0	68.7	72.7	n/a
Germany	143.4	162.5	150.7	158.0	n/a
Greece	18.8	23.9	21.9	27.6	35.6
Ireland	75.9	86.8	79.0	80.7	93.4
Italy	54.9	58.4	34.7	34.7	36.6
Netherlands	136.6	143.0	130.4	140.1	n/a
Portugal	22.8	29.2	23.3	24.0	31.0
Spain	78.3	88.1	55.4	52.0	n/a
Sweden	175.1	173.9	122.3	134.8	n/a
UK	120.9	121.3	106.4	120.4	n/a
EU*	n/a	n/a	n/a	95.6	n/a
Norway	164.9	170.0	144.7	142.7	n/a
Switzerland	254.5	248.2	223.6	261.1	n/a
USA	150.1	152.1	155.6	164.4	n/a
Japan	98.5	95.3	99.2	108.9	123.8

Denmark, Germany and the Netherlands are well ahead of the EU average of 96 dollars spent in 1994 per capita on total press advertising.

Sources

1.2.3 The Advertsising Association and EAT (1996), ECC calculations (1997)
Note: Figures from 1993 onwards are not directly comparable to previous years due to changes in methodology in the Italian and Spanish surveys. Figures from 1994 onwards for Austria are not directly comparable to previous years due to change in survey. All data are net of discounts. They include agency commision, but exclude production costs. All figures are calculated using the current exchange rates.

* The data for the EU excludes Luxembourg.

Cinema advertising spending in Germany exceeds most European countries by far: With 189.3 million dollars, spending is three times higher than in Britain or France.

1.2.4 Cinema Advertising Expenditure

	1991	1992	1993	1994	1995
Cinema advertising expenditure in million US$					
Austria	5.3	5.9	5.8	n/a	n/a
Belgium	12.3	13.6	13.7	12.0	23.4
Denmark	6.9	8.0	5.4	6.9	n/a
Finland	0.9	0.9	0.6	0.8	n/a
France	55.1	60.5	48.0	50.4	n/a
Germany	151.0	171.4	175.5	189.3	n/a
Greece	n/a	n/a	n/a	n/a	n/a
Ireland	1.3	1.7	1.8	3.4	3.9
Italy	n/a	n/a	n/a	n/a	n/a
Netherlands	9.6	11.9	10.8	1.5	n/a
Portugal	n/a	n/a	n/a	n/a	n/a
Spain	42.5	43.3	35.4	34.7	n/a
Sweden	10.4	12.4	8.6	10.4	n/a
UK	60.7	64.8	60.3	66.6	n/a
EU*	n/a	n/a	n/a	n/a	n/a
Norway	10.0	11.3	8.5	5.1	n/a
Switzerland	20.2	22.8	19.6	21.9	n/a
USA	n/a	n/a	n/a	n/a	n/a
Japan	n/a	n/a	n/a	n/a	n/a
Cinema advertising expenditure per capita in US$					
Austria	0.7	0.8	0.7	n/a	n/a
Belgium	1.2	1.4	1.4	1.2	2.3
Denmark	1.3	1.5	1.0	1.3	n/a
Finland	0.2	0.2	0.1	0.2	n/a
France	1.0	1.1	0.8	0.9	n/a
Germany	1.9	2.1	2.2	2.3	n/a
Greece	n/a	n/a	n/a	n/a	n/a
Ireland	0.4	0.5	0.5	1.0	1.1
Italy	n/a	n/a	n/a	n/a	n/a
Netherlands	0.6	0.8	0.7	0.7	n/a
Portugal	n/a	n/a	n/a	n/a	n/a
Spain	1.1	1.1	0.9	0.9	n/a
Sweden	1.2	1.4	1.0	1.2	n/a
UK	1.1	1.1	1.0	1.2	n/a
EU*	n/a	n/a	n/a	n/a	n/a
Norway	2.4	2.6	2.0	1.2	n/a
Switzerland	3.0	3.3	2.8	3.1	n/a
USA	n/a	n/a	n/a	n/a	n/a
Japan	n/a	n/a	n/a	n/a	n/a

Sources

1.2.4 The Advertising Association and EAT (1996); ECC calculations (1997)
Note: Figures from 1993 onwards are not comparable to previous years due to changes in methodology in the Italian and Spanish surveys. Figures from 1994 onwards for Austria are not directly comparable to previous years due to change in survey methodology. All data are net of discounts. They include agency commission and press classified advertising, but exclude production costs.

* The data for the EU excludes Luxembourg.

1.2.5 Radio Advertising Expenditure

	1991	1992	1993	1994	1995
Radio advertising expenditure in million US$					
Austria	109.1	145.0	132.6	149.9	178.0
Belgium	56.5	87.3	96.9	104.6	136.8
Denmark	15.5	19.0	20.8	25.9	n/a
Finland	45.0	39.2	26.9	29.6	n/a
France	563.7	632.9	628.4	666.4	n/a
Germany	635.0	698.0	675.7	777.1	n/a
Greece	17.8	29.0	39.5	44.6	61.5
Ireland	32.8	35.5	33.5	35.6	42.4
Italy	94.6	98.3	68.4	68.7	86.8
Netherlands	62.0	87.6	109.9	123.6	n/a
Portugal	32.9	50.9	38.2	34.9	57.6
Spain	461.9	508.2	405.6	395.8	n/a
Sweden	n/a	n/a	4.1	21.3	n/a
UK	239.1	250.8	265.1	338.7	n/a
EU*	n/a	n/a	2,545.6	2,816.7	n/a
Norway	9.2	25.7	28.2	50.8	n/a
Switzerland	239.1	250.8	265.1	338.7	n/a
USA	7,713.2	7,875.1	8,605.9	9,581.4	n/a
Japan	1,627.8	1,684.6	1,729.2	1,806.5	2,013.6
Radio advertising expenditure per capita in US$					
Austria	13.9	18.4	16.6	18.5	21.7
Belgium	5.6	8.7	9.7	10.5	13.7
Denmark	3.0	3.7	4.0	5.0	n/a
Finland	9.0	7.8	5.3	5.8	n/a
France	9.9	11.0	10.9	11.5	n/a
Germany	8.0	8.7	8.3	9.5	n/a
Greece	1.7	2.8	3.8	4.3	5.9
Ireland	9.4	10.0	9.4	10.0	11.8
Italy	1.7	1.7	1.2	1.2	1.6
Netherlands	4.1	5.8	7.2	8.0	n/a
Portugal	3.3	5.2	3.9	3.5	5.8
Spain	11.9	13.0	10.4	10.1	n/a
Sweden	n/a	n/a	0.5	2.4	n/a
UK	4.1	4.3	4.6	5.9	n/a
EU*	n/a	n/a	n/a	7.6	n/a
Norway	2.2	6.0	6.5	11.7	n/a
Switzerland	6.7	7.4	7.6	9.9	n/a
USA	30.6	30.9	33.4	36.7	n/a
Japan	13.1	13.6	13.9	14.4	16.1

Radio advertising spending is particularly low in Europe, especially in comparison to the U.S.. Radio in Europe is perceived as a secondary advertising medium, so 1994 spending was a mere 7.6 dollars per capita in the EU.

Sources

1.2.5 The Advertsising Association and EAT (1996), ECC calculations (1997)
Note: Figures from 1993 onwards are not directly comparable to previous years due to changes in methodology in the Italian and Spanish surveys. Figures from 1994 onwards for Austria are not directly comparable to previous years due to change in survey methodology. All data are net of discounts. They include agency commision, but exclude production costs.

* The data for the EU excludes Luxembourg.

The European TV advertising market was dominated in 1994 by Germany with a value of 3.5 billion dollars.

1.2.6 Television Advertising Revenues in 1994

Net television advertising revenue per household in US$
and television advertising revenues in million US$

Sources

1.2.6 Kagan World Media (1996)

1.2.7 Television Advertising Revenues in 1995

Net television advertising revenue per household in US$
and television advertising revenues in million US$

When TV advertising revenues are correlated to the number of households in a country, the great belief of Greek advertisers in TV becomes obvious. Also, advertisers in the UK, Portugal and Austria spent above the average.

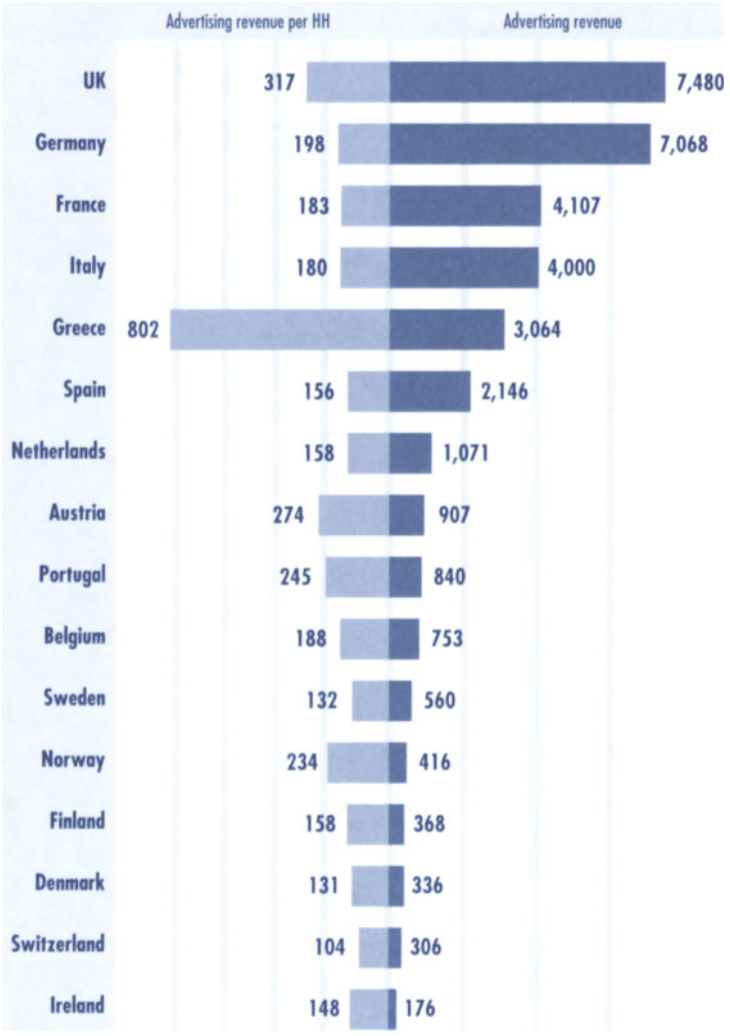
Sources

1.2.7 Kagan World Media (1996)

The source predicts that TV advertising spending will rise, so that by the year 2004, the UK – with heavy spending on TV advertising in relation to the number of households – will have a TV advertising market of about 7.5 billion dollars.

1.2.8 Forecast: Television Advertising Revenues in 2004

Net television advertising revenue per household in US$
and television advertising revenues in million US$



Sources

1.2.8 Kagan World Media (1996)

1.3 Regulations / EU Actions

1.3.1 Europe's Rolling Action Plan for Information Society

C. Accomplished actions/ C.1. Improving the business environment

No.	Specific Measures	Decision Making Process	Calender	Explanations - Implications
300	Communication on consultation on Infrastructure Green Papers	Commission adoption COM (95) 158	5-95	Report on the results of the public consultation on the Commission's proposal for action
301	Communication on the present status and future approach for open access to telecommunications networks and services (Open Network Provision - ONP)	Commission adoption COM (94) 513	11-94	The Communication confirmed the importance of the ONP principles of open and efficient access in the liberalised telecoms environment from 1998. It considered the scope of application of ONP and launched the debate prior to the submission of legislation at the end of 1995.
302	Communication on the follow-up to the Green Paper on copyright and related rights in the information society	Commission adoption	11-96	The Communication will contain a brief assessment of the consultation procedure around the Green Paper and set out the Commission's working programme in the field of copyright and related rights in the information society in the framework of the Internal Market.
303	Communication on Universal Service in telecommunications	Commission adoption COM (96) 73	18-3-96	Building on the consensus established around the infrastructure Green Paper, the Commission presented a survey of the level and availability of universal service within the EU. It also drew together the elements of the 1998 package relating to universal service to propose a strengthening of the concept of voice telephony services, in particular with regard to affordability and quality of service. It also examined the impact of universal service on regional and social cohesion, criteria for its evolution over time and the relationship between universal service and the information society.
304	Communication on follow-up to Green Paper on mobile & personal communications	Commission adoption COM (94) 492 Council Resolution	23-11-94 13-6-95	The Communication reported on the views expressed in the Consultation on the Mobile G.P. and proposed concrete measures and a timetable to act on the consensus which emerged. On the basis of this, political support was sought from the Member States.
305	Communication on the future development of the market in directories and other telecom information services in a competitive environment	Commission adoption COM (95) 43	10-10-95	The communication highlighted the importance of directory services in the general context of the information society and described the guidelines and principles which have been set out for directory services in various directives and other Community acts. Both the EP and the Council reacted positively to the communication (Presidency conclusions of 21st March 1996 Telecom Council and EP resolution of 22nd May 1996).
306	Communication on wider use of standardisation to support EU policy	Commission adoption COM(95) 412	30-10-95	
307	Communication on "Standardisation and the global information society: The European approach"	Commission adoption COM(96) 359	24-7-96	The aim of this Communication is to examine how, in the light of the characteristics of the ICT market and the ICT standards process, the best possible conditions can be created for the drawing up of standards needed for the implementation of the information society, and to indicate by what means the Community intends to promote those aspects for which it has particular responsibility.

No.	Specific Measures	Decision Making Process	Calender	Explanations - Implications
308	Communication on the directive on mutual recognition of type approval for terminals	Commission adoption COM(96) 114	9-96	The report was published on the 27th of March 1996.
309	Communication for the introduction of advanced television services in Europe	Commission adoption COM (96) 346	7-96	Financial support mechanism to assist broadcasters and programme producers with extra costs of introducing wide-screen 16.9 format. The 16.9 screen format is the only globally agreed parameter for the future of TV, including HDTV. It embodies cinema/TV convergence. Publication of a call 96/2 for broadcasting and programme production proposals in Oct. 96.
310	Decision on guidelines for TEN-ISDN	2717/95/EC Council and EP adoption OJ:	9-11-95	The objective is the development of a range of services and applications based on EURO-ISDN. A number of projects have been launched in 1995 and the 1996 call was issued on 13 April with a closing date of 24th June.
311	Directive amending Commission Directive 90/388/EEC of 23 July-1990 regarding the implementation of full competition in telecommunication markets	Commission adoption Directive 96/19 OJ: L 74/13	13-3-96 22-3-96	Following political agreement on the full liberalisation of voice telephony services and infrastructure, this measure gives legal form to the date of the 1st of January 1996 and provides for possible transitional periods for Greece, Ireland, Portugal, Spain and Luxembourg subject to Commission approval. The measure also provides for early liberalisation from 1996 of alternative infrastructures for liberalised telecoms services and sets out principles under the competition rules for licensing, interconnection, universal service, numbering and directory services.
312	Directive amending Commission Directive 90/388/EEC of 23 July-1990 regarding the abolition of the restrictions on the use of cable TV networks for the provision of telecom services	Commission adoption Directive 95/51/EC OJ: L 256/49	18-10-95 26-10-96	Following political agreement on the early liberalisation of alternative infrastructure for services which are already open to competition, this measure provides for the use of cable television networks to deliver such services from 1996. It also provides for possible transitional periods for Greece, Ireland, Portugal, Spain and Luxembourg subject to Commission approval.
313	Directive amending Commission Directive 90/388/EEC of 23 July-1990 regarding mobile and personal communications	Commission adoption COM (96) Directive 96/2/EC OJ: L 20/59	16-1-96 26-01-96	The measure fully opens the market for mobile communications to competition as foreseen in the 1994 Mobile Green Paper. It provides for self-provision of infrastructure or use of third party infrastructure and allows from 1998 direct interconnection between mobile networks. It requires Member States to consider requests for licences for DECT systems from 1996 and for DCS 1800 digital mobile networks from 1998.

No.	Specific Measures	Decision Making Process	Calender	Explanations - Implications
314	Directive on the application of ONP (Open Network Provision) to voice telephony	Commission adoption COM(95) 575 Directive 95/62/EC Council and EP Adoption OJ: L 321/6	 27-11-95 13-12-95 30-12-96	This directive has been re-submitted at the urging of EP, following its rejection of the Council Common Position in July 1994, the conciliation procedure having failed over the issue of comitology. The proposal builds on the agreements reached between the Council and the EP during the conciliation procedure. The Directive's three fundamental objectives are: - determining the rights of the users of voice telephony services in their relations with telecommunications bodies - improving access for all users, including the providers of services, to the fixed infrastructure of public telephone networks (the Directive does not apply to mobile telephones) - encouraging the provision of voice telephony services at Community level (see also A.1.10).
315	Directive on satellite-communications: liberalisation of satellite services and terminals	Directive 94/46/EC OJ: L 268/15	13-10-94 19-10-94	Following Council Resolution 92/C8/01 the Directive extends the scope of Directives 88/301/EEC and 90/388/EEC to remove monopolies over satellite equipment and services.
316	Directive on the use of TV-standards	Council and EP adoption Directive 95/47/EC O.J.: 23/11/95 No. L281/5	24-10-95	The Directive provides a regulatory framework for advanced TV (16:9, digital, HDTV) including standards; and deals with the issue of conditional access to digital pay television, following the outcome of an industry-wide consultation on this topic.
317	Directive on legal protection of databases	Directive 96/9/EC Council and EP adoption OJ: L 77/20	 11-3-96 27-03-96	The Directive provides for the harmonisation of the author's right relating to the structure of databases and for the creation of a new right protecting substantial investments made by makers of databases.
318	Green Paper on numbering	Commission adoption	11-96	The rapid development of the telecom market means that reform of the numbering environment will be inevitable. This reform will need to be based on an agreement on the political priorities, stemming both from the liberalisation trend and from changing technological trends. The technical work will follow on from this. The Green Paper is intended to initiate a broad consultation with sector players on these matters.
319	Green Paper on the legal protection of encrypted services	Commission adoption COM (96) 76	6-3-96	The Green Paper aims to identify, in the light of the Internal Market principles, the measures needed to safeguard the legal protection of encrypted services at an equal level throughout the Community. It is closely related to IPR protection, to media policy and to the Directive on satellite and cable broadcasting of 1993.
320	Green Paper on the liberalisation of telecom infrastructure and cable TV networks: principles & timetable (Part I)	COM (94) 440 Council Resolution EP Resolution	17-11-94 4-95	The Green Paper establishes the general principle of the free choice of infrastructure to deliver services already open to competition. It proposes immediate limited action and links full competition to the 1998 date for services liberalisation.

No.	Specific Measures	Decision Making Process	Calender	Explanations - Implications
321	Green Paper on the liberalisation of telecom infrastructure and cable TV networks: implementation measures (Part II)	COM (94) 682 Council Resolution EP Resolution May-95	13-6-95 5-95	The Green Paper has launched a consultation on the issues raised by allowing competition in infrastructure for the basic telephone service and the relevant safeguards. It sets out future policy on infrastructure liberalisation and initiates public debate on the issues.
322	Green Paper on copyright and related rights in the information society	Commission adoption COM (95) 382	Jul-95	The Green Paper identifies in detail those issues in the field of copyright where initiatives may be needed with respect to the IPRs exploited for the new electronic services. It is based on the conclusions of a hearing with interested circles in July 1994. The deadline for written submissions was end October 1995. A hearing on certain specific questions in relation to technical systems of identification and protection and on certain aspects related to the acquisition and administration of rights took place in January 1996. The consultation process was closed in the context of a Conference on the matter held in Florence in June 1996.
323	Recommendations relating to the legal aspects of electronic data interchange (EDI)	Commission adoption	19-10-94	EDI users are recommended to use a European model EDI Agreement and Member States are recommended to facilitate the use of this model agreement, which legal provisions aim at providing a contractual approach to the legal issues related to the use of EDI.

C.2. INVESTING IN THE FUTURE

No.	Specific Measures	Decision Making Process	Calender	Explanations - Implications
324	Communication on a methodology for the implementation of information society applications	Commission adoption COM (95) 224	13-6-95	This communications proposes a methodological approach of a general nature for the implementation of all types of applications which represent the driving force of the information society.
325	Communication on Information Society: From Corfu to Dublin, The new emerging priorities	Commission adoption COM (96) 395	24-7-96	The objective of this communication is to indicate the impact of the information society on European Union policies, thereby highlighting future priorities: improving of the business environment; investing in the future; putting people at the centre; meeting the global challenge. The information society Council of the 8-10-96 welcomed the intention of the Commission to present a revised action plan to the Dublin Summit.

C.3. PEOPLE AT THE CENTRE

No.	Specific Measures	Decision Making Process	Calender	Explanations - Implications
326	Communication on telematics applications for transport in Europe	Commission adoption COM (94) 469 Resolution EP Council resolution 95/264/01	4-11-94 6-95 28-9-95	The communication provides the basis for an action plan for the implementation of Transport Telematics in Europe. Financial engineering of public-private partnerships needs closer attention. The Council Resolution of Sept-95 concentrates on Telematics Applications in Road Transport, identifies priorities for short term actions and recommends the setting up of a High Level group to assist the Commission with the strategy for deployment.
327	Communication on Teaching and learning - Towards the learning society	Commission adoption COM(96) 471	2-10-96	Requested by the European Council at Florence (June 1996), the proposed action plan is aiming at increasing the synergies among national initiatives to promote the use of new technologies in education. The objectives are to speed up the diffusion of common multimedia platforms for learning, the development of quality educational content, the training of teachers and the exchange of experiences through setting up a European school network based on the interconnection of existing school networks. A European conference (Dec-96, Brussels) will take stock of developments in national schools networks, as well as needs, experiences and difficulties encountered.
328	Communication on harmful and illegal content on Internet	Commission adoption COM (96) 487	16-10-96	The Communication refers to the legal and regulatory challenges posed by content circulating on the Internet, giving particular emphasis on the issue of harmful and illegal content. It proposes options for short term action to combat or control such content (self-regulation, technical protection means, improved international co-operation, education and awareness).
329	Decision on the Media II Programme	Commission adoption COM(95) 263 Council adoption 95/564/EC Council adoption 95/563/EC	22-6-95 22-12-95 10-7-95	Financial support mechanisms for key sectors of the programmes industry. The Commission's proposal has two parts: MEDIA II - training (1996 - 2000). A programme for the training of professionals of the European audiovisual programme industry MEDIA II - development and distribution (1996 - 2000). This programme aims to promote the development and the distribution of audiovisual works.
330	Decision on guidelines for the trans- European transport network	Council and EP adoption OJ: L 228	9-9-96	Intelligent transport systems (ITS) for traffic management, positioning and navigation is an integral part of the Trans European Networks-Transport guidelines. They include the necessary technical installations and information and telecommunications systems to ensure harmonious and efficient traffic management. All the priorities of the guidelines such as connections, key links, interconnections, interoperability, provisions relating to the environment, the optimisation of capacity and efficiency, safety apply to ITS and require the use of ITS for their achievement.
331	Decision on INFO 2000 Programme	Commission adoption COM (95) 149 Council adoption 96/339/EC	30-6-95 20-5-96	A multi-annual programme to stimulate the development of a European multimedia content industry and to encourage the use of multimedia content in the emerging information society.
332	Decision on a Multi-annual programme on Multilingualism in the Information Society Programme (MLIS)	Commission adoption COM (96) 456 Council adoption O.J. :	2-10-96 8-10-96	The multiannual programme promotes multilingualism in the information society and has been allocated a budget of 15MECU. It includes the following action lines: a. Support for the creation of a framework of services for European Languages; b. Encouraging the use of modern language technologies, resources and standards; c. Promoting the use of advanced language tools in the European public sector; d. Accompanying measures.

No.	Specific Measures	Decision Making Process	Calender	Explanations - Implications
333	Directive on the protection of individuals with regard to the processing of personal data and on the free movement of such data	EP and Council adoption 95/46/EC OJ: L 281/31	24-10-95 23-11-95	The general directive provides for a number of rights for the data subject and of obligations on the controller of data processing (fair processing, quality of data, lawfullness of processing, notification of certain processing). The directive is designed to ensure a high level of protection for individuals and creates a level playing field for the free circulation of personal data in the Community. The principles of the Directive apply to all areas of the information society and will constitute the basis for specific rules in the telecommunications field.
334	Green Paper: Living and working in the Information Society: People first	Commission adoption COM(96) 389	24.7.96	The Green Paper forms the basis for a wide discussion on social, economic and technological challenges in the context of employment and economic structure, future of work, labour market and learning and living in the information society. A consultative process was officially launched in a Colloquium held in Dublin and organised together with the Irish Presidency. Contributions and reactions to the Green Paper will be invited from the widest possible audience until the end of 1996.
335	Green Paper on the protection of Minors and Human Dignity in Audiovisual and Information Services	Commission adoption COM (96) 483	16-10-96	The Green Paper will initiate a medium to long term reflection on the issue of the protection of minors and human dignity in audiovisual and information services.
336	White Paper on "Teaching and learning - Towards the learning society"	Commission adoption COM(95) 590	29-11-95	This White Paper is part of a process designed simultaneously to provide an analysis and to put forward guidelines for action in the fields of education and training. After describing what is at stake and analysing the changes which need to be considered, while respecting the principle of subsidiarity, the White Paper suggests five general objectives for action setting out for each of them one or more support projects at Community level.

C.4. MEETING THE GLOBAL CHALLENGE

No.	Specific Measures	Decision Making Process	Calender	Explanations - Implications
337	International Conference at G7 ministerial level on information society (Brussels)		2-95	A meeting of relevant G7 ministers took place in Brussels on Feb 25-26 1995. The meeting emphasised the necessity to encourage the development of a world-wide information society. Eleven pilot projects were identified for international cooperation. The implementation of the G7 conclusions across the different EC policies related to information society is under way. A progress report on the pilot project was presented at the Halifax G7 meeting in June.
338	International Conference on information society and development (ISAD) in South Africa		13/15-5-96	South African Vice President Mbeki, proposed at the occasion of the G7 Conference in Brussels an Information Society Conference with the developing countries hosted by South Africa. The conference took place in May with the participation of many developing countries. Contacts have been established with the Egyptian government for the preparation of a follow-up meeting.

DELETED ITEMS

No.	Specific Measures	Decision Making Process	Calender	Explanations - Implications
112	Directive updating the directive on mutual recognition of type approval for terminals, in particular in respect of mobile terminals	Commission adoption COM (96) Council and EP adoption	11-96 97	Action in the context of the Green Paper on mobile communications which aims at extending the scope of existing directive 91/263, in view of full liberalisation of all telecom services by 1 Jan. 1998.
109	Decision on an Action Plan "Leading-by-example": The role of the European institutions as facilitators for electronic commerce	Commission adoption	1 Q 97	The Action Plan will describe best practice options for public administrations and propose actions enabling the EU institutions "to lead by example" by setting ambitious targets for the use of the new technologies and the re-engineering of administrative procedures that facilitate the seamless exchange of data in support of business activity.
118	Initiatives on digital signatures	Commission adoption	1 Q 97	The Commission is considering the alternative legislative approaches to take on the issue of digital signatures.
121	Communication on electronic toll collection and fee payments for road transport	Commission adoption	4 Q 97	This Communication is based on the Council Directive of 25-10-93 on the applications by Member States of taxes on certain vehicles used for the carriage of goods by road, and tolls and charges for the use of certain infrastructures. There is a strong request from the European industry for a stabilisation of the specifications for the production of automatic toll collection equipment.
126	Directive on harmonisation measures in deployment of road transport telematics	Commission adoption	1 Q 97	Based on the Council Resolution of the 28-9-95 on the deployment of road transport telematics, this will include all the basic requirements for the setting up of traffic information and navigation systems in Europe.
128	Communication on the deployment of telematics applications in health	Commission adoption	97	This Communication will cover health care applications as well as standardisation issues and training.
132	Communication on the follow-up to the Green Paper on access to and exploitation of public sector information	Commission adoption	97	The Communication will contain an assessment of the reactions received from the Member States and from market actors (industry and users). It will describe actions foreseen to improve accessibility of public sector information and will indicate ways to enable the private sector to exploit more extensively the market potential of public sector information.
	Decision on interoperability of IDA networks	Commission adoption	97	This follows Council decision 95/468/EC of the 6-11-95 adopting the IDA programme, which invites the Commission to present the Council and the EP new proposals following the midterm programme evaluation. This proposal concerns the adoption of measures to ensure interoperability of networks for the interchange of data between administrations in Europe.

Sources

1.3.1 Communication on Europe at the Forefront of the Global Information Society: Rolling Action Plan (December 1996)

1.3.2 Broadcasting Regulatory Bodies in Europe

Country	Regulatory Bodies and Self-Regulating Bodies	Self-Regulation	Management of AV-sector: Licensing	Management of AV-sector: Power of appointment	Supervisory/Regulatory Functions: Supervisory	Supervisory/Regulatory Functions: Regulatory	Quasi-judicial	Advisory	Approaching Procedures/ Who can ask for sanctions?	Sector and Possible sanctions**
Austria	Commission for the Observance of the Broadcasting Law, RFK (only public sector)						*		1) individuals provided they have suffered as a direct result of a breach of law or that they have been supported by 500 other viewers or listeners 2) public bodies (federal state, ORFs viewers and listeners Council, board of management)	Public: Publication of the decision
Belgium	Conseil Supérieur de l'Audiovisuel (Fr)							*		
	Advertising Standards Commission (Fr)							*		
	Litigation Council (Fl)						*		individual having a direct interest	Public/Private: Issue a warning order that the verdict be broadcast
	Commercial Advertising and Sponsorship Council (Fl)						*		individual having a direct interest	Public/Private: Suspend the screening of the programme incriminated for a maximum of one month
	Media Council (Fl)							*		
Czech Rep.	Council for Radio and TV Broadcasting		*		*	*	*	*	instigated by the regulatory body itself	(1) Public: warnings; (2) Private: warning; fines; withdrawal of the licence
Denmark	Local Radio and TV Boards		*		*			*	Minister of Culture, instigated by the regulatory body itself	Private: Withdrawal of the licence
	Local Radio and TV Committee						*	*	any complaints concerning a Local Board's decision	
	Cable and Satellite Commission					*		*	Minister of Culture, instigated by the regulatory body itself	Private: Withdrawal of the licence
	Radio and TV Advertising Commission						*	*	individual having a direct interest	
Finland	No Regulatory Body									
France	Conseil Supérieur de l'Audiovisuel		*	*	*			*	instigated by the regulatory body itself, by specific professional organisations	(1) Public: warnings; (2) Private: warning; fines; withdrawal of the licence
Germany	ARD (public broadcasting)	*								
	ZDF (public broadcasting)	*								
	Landesmedienanstalten		*		*	*			instigated by the regulatory body itself	Private: Warning; fines; withdrawal of the licence
Greece	Representative Supervisory Assembly of Viewers and Listeners, ASKE (public broadcasting)							*		
	National Council for Radio and TV				*	*		*	instigated by the regulatory body itself	(1) Public: warning, decision broadcast (2) Private: warning, broadcast of the decision, fines, withdrawal of the licence

The overview of European broadcasting bodies, their approach procedures and possible sanctions shows the significant differences between the countries regarding media regulations.

Country	Regulatory Bodies and Self-Regulating Bodies	Self-Regulation	Management of AV-sector:		Supervisory / Regulatory Functions		Quasi-judicial	Advisory	Approaching Procedures / Who can ask for sanctions?	Sector and Possible sanctions**
			Licensing	Power of appointment	Supervisory	Regulatory				
Hungary	Under discussion									
Ireland	RTE Authority (public broadcasting)	*								
	Independent Radio and TV Commission		*		*	*		*	instigated by the regulatory body itself	Private: Fines, suspension of the licence
	Broadcasting Complaints Commission						*		individual	Public/Private: Order that the verdict be broadcast
Italy	Parliamentary Commission (public broadcasting)				*			*	complaints relating to access to air-time (political parties, social and cultural organisations)	Public: Decision to allow the access
	Guarantor				*			*	individual (right of reply) or by itself	Private: Warning; Guarantor may order broadcast to transmit his decision
Luxemb.	National Council for Programmes				*			*		
Netherlands	Media Commission		*		*	*		*	instigated by the regulatory body itself	Public/Private: Fines; reduction in the amount of airtime; withdrawal of the licence
Norway	Mass Media Authority (local)		*		*			*		Private: Warning; fines; suspension or withdrawal of the licence
	Complaints Tribunal						*		individual or corporation having an interest	Public/Private: Publication of a communiqué
Poland	National Broadcasting Council		*	*	*	*		*	instigated by the regulatory body itself	(1) Public: Warnings (2) Private: Warnings; fines
Portugal	High Authority for Mass Communication							*		
Russia	Under discussion									
Spain	Under discussion									
Sweden	Swedish Broadcasting Commission				*			*	instigated by the regulatory body itself, individuals	(1) Public: Report of the decision (2) Private: Report of the decision; fines
	Swedish Radio and TV Authority (local)		*		*			*	instigated by the regulatory body itself	Local: Warning; fines
Switzerland	Independent Complaints Authority (AIEP)						*		- 21 private individuals - individual directly involved - authority involved or Federal Office for Communication - individual if there is a public interest	Public/Private: Warning
UK	BBC (public broadcast.)	*								
	Sianel Pedwar Cymru (SC4)	*								
	Independent TV Commission		*		*	*		*	instigated by the regulatory body itself	Private: Warnings; requirement to broadcast an apology; fines; shortening or revocation of the licence
	Broadcasting Complaints Commission						*		individual having a direct interest	Public/Private: Obligation to publish the decision
	Broadcasting Standards Council					*		*	instigated by the regulatory body itself, individual	Public/Private: Publication of the decision

Sources:

1.3.2 Robillard (1995), p. 268 - 274

* Power to appoint staff of public broadcasting companies;

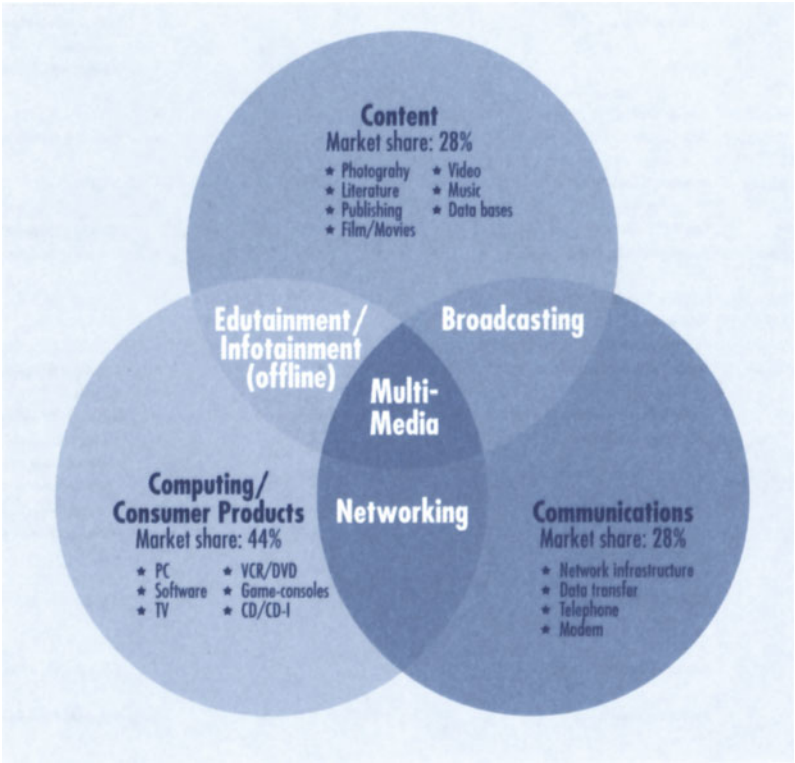
** Authorities that have no power of sanction have not been taken into consideration

1.4 Convergence / Steps

Becoming digital: The ongoing media evolution brings formerly separate industries together. Multimedia appliances allow interactivity and new means of communication.

1.4.1. Convergence between Content, Communications and Computing

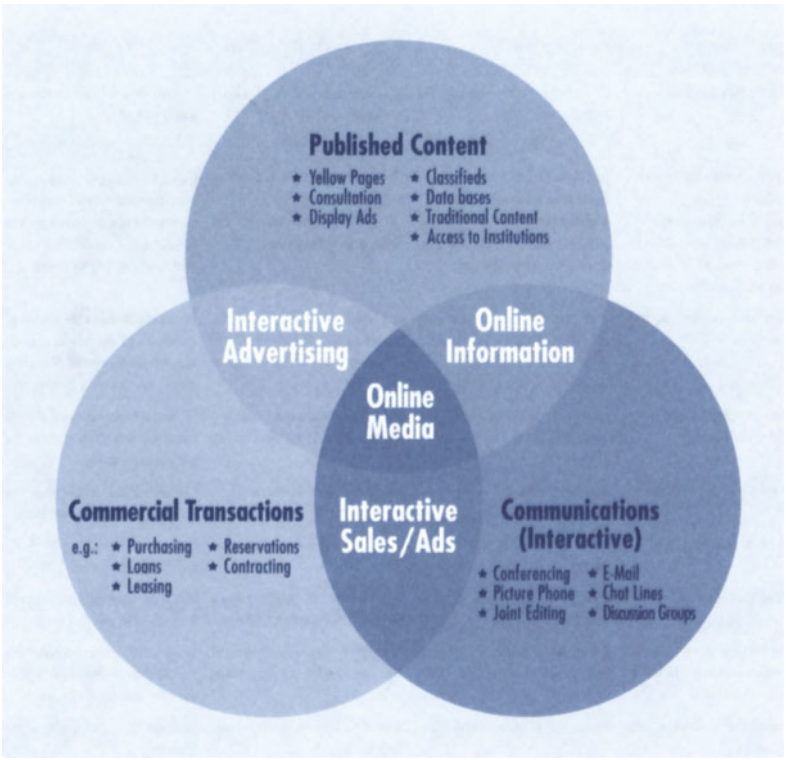
Total Market Value 1996: US$953 billion



Sources

1.4.1 EITO (1996); Bertelsmann (1996); Tapscott (1996); ECC research (1997)

1.4.2 Projections: Convergence of Local Online Media



Local Online Media could integrate old means of communication and offer more narrowly targeted forms of advertising and sales.

Sources

1.4.2 European Commission: Electronic Publishing (1996); ECC (1997)

Interactivity and selectivity are the key measures for possible steps in the interactive media field. The development of sufficient technologies and the still questionable demand of users for such services will determine the time-frame as well as the success of interactive media.

1.4.3 Evolution of Interactivity: Possible Development Steps in the Interactive Media Field

Level of interactivity	Very Low	Low	Medium	High	Very High
Users...	... select their programmes	... control the time they want to use a service	... select short segments of programmes or services	... interact in a network, to select a special service from a system	... interacting with the system and among each other
Time-frame	1994 - 1995	1996 - 1997	1998 - 1999	2000 - 2004	2005+
Characteristics	(low speeds; small audience) member-generated content; branded, repackaged content areas; reference database materials; rudimentary transactions; channel creation, new media programming	(text/picture-based, higher speeds; niche audiences) packaging of multiple content streams; interactive shopping malls; interactive marketing areas as information providers; pointing to Web sites	(multiple media; higher speeds; critical mass audiences) original content; commerce as a programmed area; network initiated, purchased or produced shows	(full-motion video; speed not an issue; mainstream media) convergence of cable, telephony and datacom and entertainment	(full-motion video; speed not an issue; mainstream media) convergence of cable, telephony and datacom and entertainment: advertisers/marketers pay the freight
Films	Free selection of titles (near Video on Demand)	Selection when to start and stop. (Video on Demand)	Users can decide upon the next scene (Interactive TV)	Specialised dramatics, viewers can participate. Predefined selection of films collected by the server system	Viewers can determine story, actors or situation and participate. Server searches automatically for films which relate to the interests of the viewers
Live Sports	Local stations showing regional sport events	Selection of camera perspectives, angles or slowmotion replay	Predefined selection of sporting events, collected by the server system	Predefined selection of sporting events, collected by the server system	Server searches automatically for sporting events which relate to the interests of the viewers
Homeshopping	Orders by Telephone	Orders with smart- or bankcards	Electronic catalogues	Local shops offer own services	Customised electronic warehouses relating to preferences of the users
Advertising	Orders by Telephone	Banner Ads on the Internet	Users select if they want further information	Users select if they want further information	Customised ads relating to users' preferences and interests
Telelearning	Telelectures	Specialised training	Selection of courses and materials from the system server	Students discuss topics among themselves and with their teachers	Students discuss topics among themselves and with their teachers
News	Selection of news (near News on Demand)	Reduced selection of news from the server-system (near News on Demand)	Predefined selection of news and topics presented at any time. (News on Demand)	Predefined selection of news and topics presented at any time. (News on Demand)	Server selects news and topics and presents them on demand, local news and topics coproduced with viewers
Communications	Low quality video-conferencing, data-sharing, e-mail	Low quality video-conferencing, data-sharing, e-mail	Medium quality video-conferencing	Videomail, medium quality video-conferencing	Realtime high-quality video-conferenceing
Games	Interactive games on TV via telephone	Games on demand	Games against the server-system	Betting in a virtual casino	Games against other users

Sources

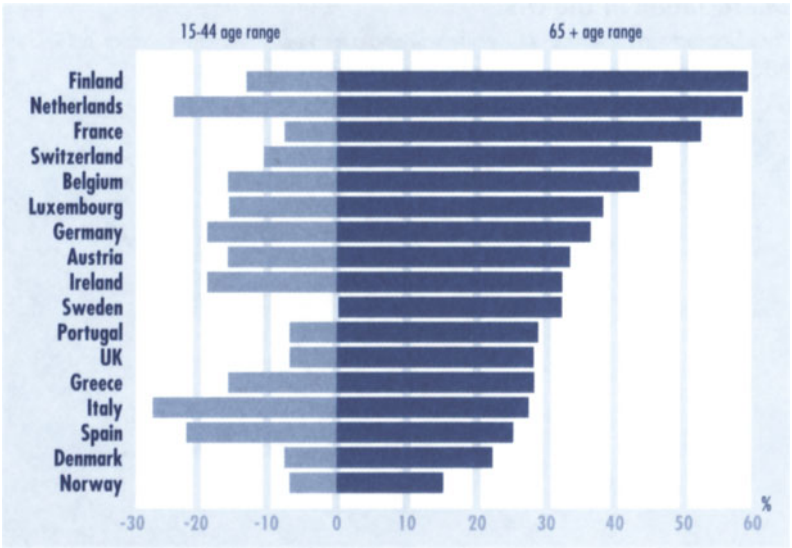
1.4.3 BIS Strategic Decisions; Screen Multimedia 2/95; Morgan Stanley (1996): The Internet Report, p. 1-22; ECC research (1997)

2. The Consumer/Microeconomics

2.1 General

2.1.1 Ageing Population in Europe: Percentage Change by 2020

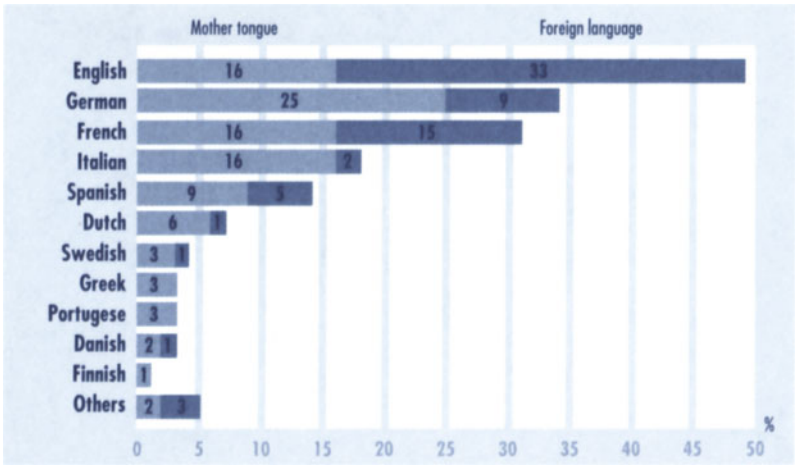
Forecasted growth rates in percent



The European population will get older and older. For media this trend means developing new formats and programmes, for advertisers it means developing new forms of advertising, especially designed for the elderly.

2.1.2 Languages in Europe

In percent



Nearly half of the European population claims to speak English, although only 16 percent of Europeans use English as their mother tongue. Pan-European media will find it difficult to use any other language than English.

Sources

2.1.1 National statistical offices/Carat; Eurostat (1995)
2.1.2 EU; Focus, 35/96

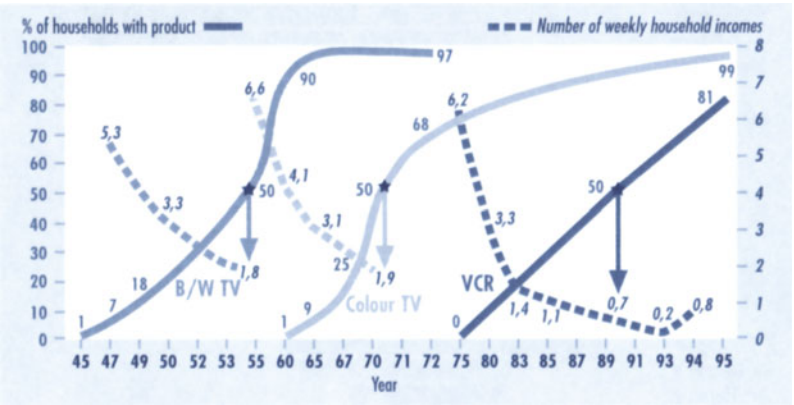
2.2 Consumer Spending

2.2.1 Overview

2.2.1.1 Electronic Household Products Adoption Rate and Price Depreciation in the U.S.

Price Depreciation: Number of weekly household incomes to pay for product in the US; Adoption Rate: Percentage of Households equipped with the product

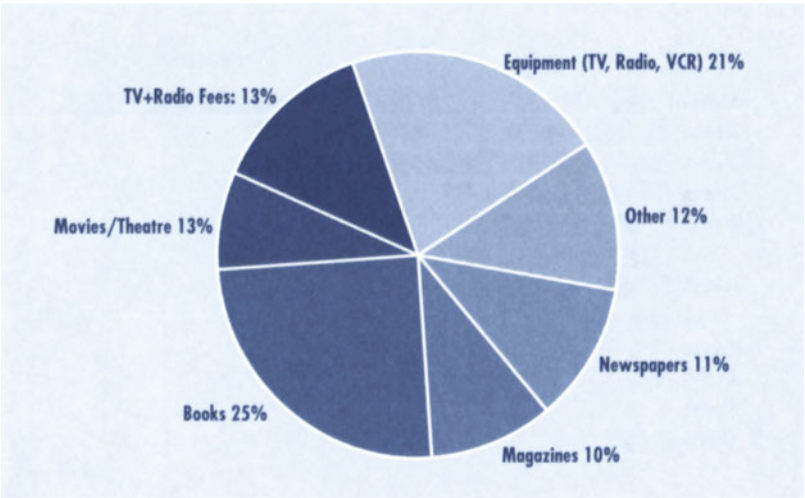
Household penetration and price depreciation correlate: Black/white TV and colour TV reached a penetration rate of 50 percent when the average price of a set was at 1.8 weekly household incomes. The VCR reached a penetration rate of 50 percent when the price was down to 0.7 weekly household incomes. – Fierce competition, or is the VCR just a less desired device?



2.2.1.2 Shares of Media Expenditure in Europe

As % of consumer expenditure on media from disposable income

The drop in consumer expenditure on media in the early 1990s is understandable: recession took its toll, as media expenditure in general is among the easiest to be reduced under financial constraints. Surprisingly, books still account for the highest share of consumer expenditure on media.



Sources

2.2.1.1 Dutton/Rogers/Jun (1987), p. 146; Pavlik (1996), p. 240; IP-Group (1996); ECC research (1997)
2.2.1.2 European Commission (1996): Electronic Publishing

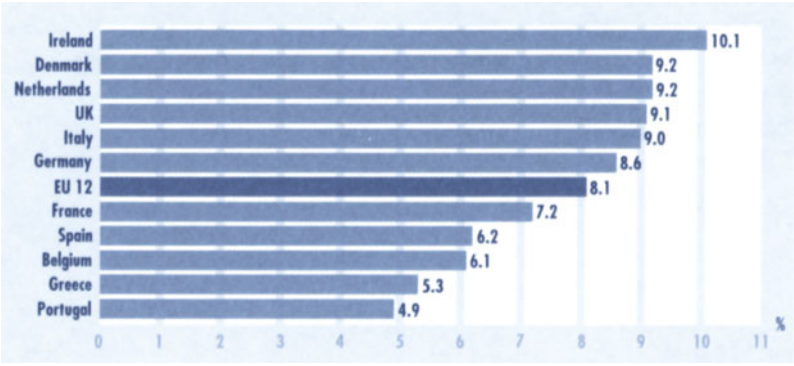
2.2.1.3 Comparison of Final Consumption by Households by Sector

Figures in %, as of 1993

Country	Food, beverages, tobacco	Clothing and footwear	Furniture, furnishings and household equipment	Medical care and health expenses	Transport and communications	Recreation, entertainment, education and cultural services	Recording, music and recording hardware
Belgium	19.0	7.8	10.8	11.2	13.6	6.1	0.5
Denmark	21.2	5.3	6.5	2.1	16.3	9.2	0.6
France	19.1	6.4	7.8	9.3	16.7	7.2	0.4
Germany	16.8	7.4	8.4	14.2	15.9	8.6	0.6
Greece	37.9	8.7	8.2	3.8	14.3	5.3	0.3
Ireland	35.0	6.9	7.7	3.8	12.9	10.1	0.6
Italy	20.7	10.1	9.4	6.6	12.2	9.0	0.2
Netherlands	18.1	6.9	8.5	12.5	11.0	9.2	0.7
Portugal	37.1	10.3	8.6	4.5	15.4	4.9	0.8
Spain	21.8	8.9	6.6	3.8	15.4	6.2	0.3
UK	21.5	6.2	6.7	1.4	17.9	9.1	0.6
EU 12	20.0	7.7	8.2	8.1	15.1	8.1	0.5

2.2.1.4 Spending on Recreation, Entertainment, Education and Cutural Services by Households

in %, as of 1993



The composition of European household expenditures differ: While people in Denmark, Italy, the UK and Ireland spent 9 or more percent of their disposable income on recreation, entertainment and education, people in countries such as Greece, Spain or Portugal spent only between 5 and 6 percent on this sector.

Sources

2.2.1.3 IFPI (1994)
2.2.1.4 IFPI (1994)

While expenditure on movies remained almost constant, video-related expenditure fell. The multimedia industry (except for the video-games hardware industry) and TV revenues grew significantly betweeen 1992 and 1994.

2.2.1.5 Direct and Indirect Consumer-Spending on Audiovisual & Multimedia Goods and Services in Europe

In million ECU

	1992	1993	1994	94/93 (% growth)
Film				
Box office	2,576	2,926	2,989	2.2 %
TV				
Advertising costs	13,662	13,182	15,117	14.7 %
TV fees	6,854	7,121	7,430	4.3 %
Pay-TV subscription-fees	2,025	2,379	2,974	25.0 %
Cable subscription-Fees	2,416	3,032	3,382	11.5 %
TV-sets	10,844	10,086	10,123	0.4 %
Video				
Cassettes	4,066	4,434	5,040	13.7 %
VCRs	6,811	5,299	4,682	- 11.6 %
Blank cassettes	2,058	2,140	1,884	- 12.0 %
Camcorder	2,821	2,704	2,269	- 16.1 %
LaserDisc Players	61	82	49	- 40.2 %
LaserDiscs	43	42	n/a	n/a
Multimedia				
CD-I Players	27	70	110	57.1 %
PCs	1,741	2,855	4,830	69.2 %
CD-Rom Drives	15	59	134	127.1 %
Video Games - Hardware	1,588	1,047	505	- 51.8 %
Video Games - Software	n/a	n/a	n/a	n/a
Total	**57,607**	**57,459**	**61,939**	**8.0 %**
GNP	5,835,000	5,716,000	5,985,000	5.0 %
Audiovisual & multimedia spending as % of GNP	**0.99 %**	**1.01 %**	**1.03 %**	*

Sources

2.2.1.5 European Audiovisual Observatory; BIPE Conseil; EPOD; EBU; Screen Digest (1996)

2.2.2 Per Capita

2.2.2.1 Total Media-Related Expenditure per Capita in Selected Countries

Expenditure per capita in US$ per year (1994)

	France	Germany	Italy	Japan	Spain	USA	UK
Interactive	4.21	3.81	1.30	n/a	1.94	n/a	4.23
TV Licence Fees	20.90	41.96	24.91	n/a	n/a	n/a	44.23
Pay TV	25.03	4.29	2.94	3.06	7.03	18.20	15.77
Home Video (Rental & Purchase)	19.86	17.63	8.94	44.17	9.83	77.49	30.53
Audio Software	34.70	59.25	9.42	47.95	13.65	45.49	41.66
Audiovisual Expenditure - TOTAL	104.7	126.94	47.51	95.18	32.45	141.18	136.42
Newspapers	n/a	48.43	n/a	n/a	n/a	n/a	n/a
Magazines	n/a	56.39	n/a	n/a	n/a	n/a	n/a
Books	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Printmedia Expenditure (93) - TOTAL	34.90	47.20*-104.82	30.70	n/a	20.30	n/a	62.30
Movies (average)	13.55	11.13	8.93	12.12	8.33	20.71	10.88
Theatre/Opera/Concerts	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Exhibitions	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Event Expenditure - TOTAL	n/a	n/a	n/a	n/a	n/a	n/a	n/a
CD Audio	n/a	n/a	n/a	n/a	n/a	17.54	n/a
Hifi, Stereo	n/a	10.08##	n/a	n/a	n/a	n/a	n/a
Television Sets	n/a	n/a	n/a	n/a	n/a	29.02#	n/a
VCRs	n/a	16.53##	n/a	n/a	n/a	11.52	n/a
Camcorders	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Equipment Expenditure - TOTAL	n/a	n/a	n/a	n/a	n/a	58.08	n/a
Telecommunication Services	402.30	467.55	273.91	n/a	177.30	n/a	367.82
Telecommunication Equipment	100.28	109.10	58.12	n/a	62.91	n/a	78.70
Telecommunications (TLC) - TOTAL	502.58	576.65	332.03	606.90	240.21	628.32	446.52
Computer Hardware	137.62	207.88	76.51	n/a	57.74	32.41**	149.42
Office Equipment	27.87	33.62	14.81	n/a	14.05	n/a	27.49
Software	69.24	130.85	46.86	n/a	25.31	n/a	87.02
Services	145.80	102.41	79.65	n/a	23.61	n/a	92.89
Hardware Maintenance & Support	63.74	59.24	19.80	n/a	19.89	n/a	50.72
Information Technology (IT) TOTAL	444.27	534.00	237.63	669.97	140.60	810.39	407.54
Ad. spendings - TOTAL	170.28	386.88	102.69	499.68	107.29	602.00	212.52
TOTAL	1,270.28	1,698.28	759.49	1,883.85	549.18	2,260.68***	1276.18

Big Media Spenders: Overall media spending per capita in the USA in 1994 was about four times higher than in Spain; it was US$ 377 higher than in Japan and US$ 562 higher than in Germany.

Sources

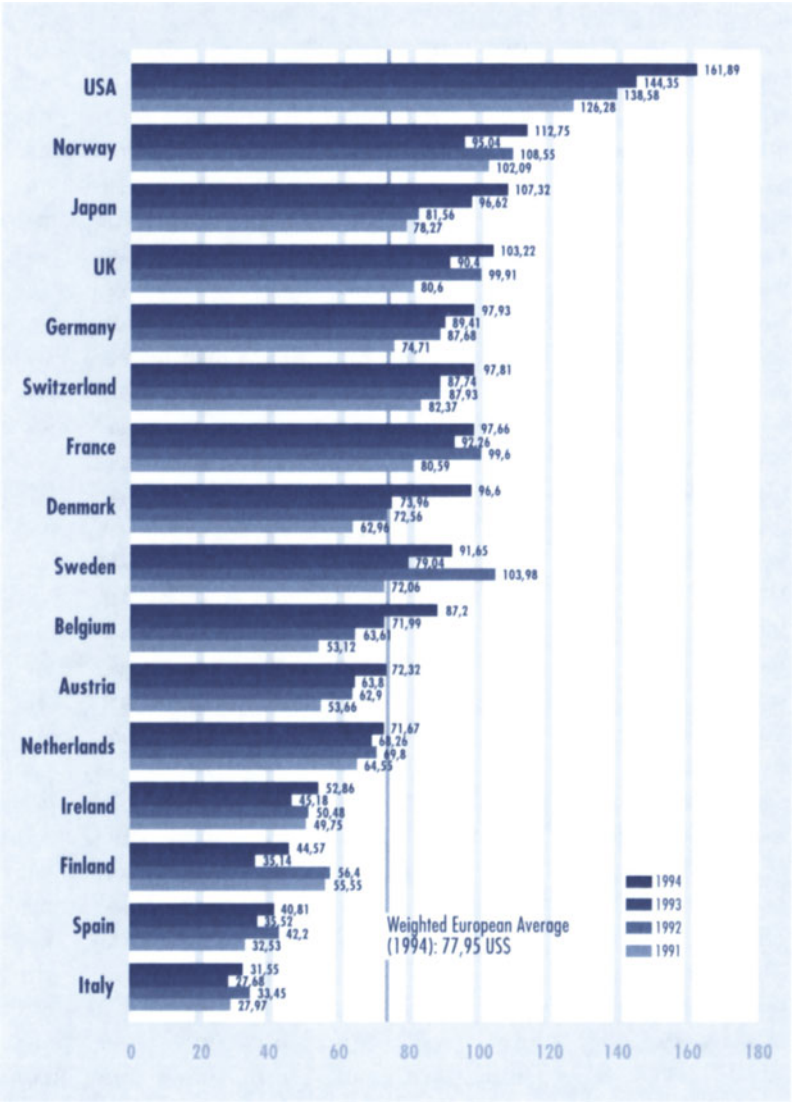
2.2.2.1 Screen Digest March 1996; EITO (1996); Goldman/Sachs; IP-Group (1995); TBI Yearbook (1996); World Telecommunication Development Report - ITU (1995); StBA: Statistik und Wirtschaft 7/1996, Meeker /De Puy: Morgan Stanley - The Internet Report (1996); Media Perspektiven (1996); ECC research and calculations (1997)

* The German statistics show an average spending of $104.82 per year. The smaller figure was chosen for comparability;
** only includes Home PCs;
*** without media related household appliances;
# colour TV only;
ECC estimate

The 1994 European average of US$ 78 for audio, cinema, video (rental & purchase), Pay TV and interactive media spending demonstrates the differences: While per capita spending in the U.S. was twice as high as the European average, people in Italy only spent half of the European average.

2.2.2.2 Media Spending per Capita in Europe, USA and Japan

Average spending per capita and year (1991-1994) in US$ for audio, cinema, video (rental & purchase), Pay TV and interactive media



Sources

2.2.2.2 Screen Digest, March 1996

2.2.2.3 Total Spending on Media Software Products per Capita

1994, TV licence fees not included

	Spending on software in US$	market share in %				
		Audio	Video	Pay TV	Interactive	Cinema
Austria	72.32	65	18	2	–	15
Belgium	87.20	48	29	7	3	13
Denmark	96.90	55	25	7	–	13
Finland	44.57	51	23	8	–	18
France	97.66	36	21	26	4	14
Germany	97.93	60	18	4	4	13
Ireland	52.86	34	44	–	–	22
Italy	31.55	30	28	9	4	28
Netherlands	71.67	60	21	6	3	10
Norway	112.75	55	29	3	–	14
Spain	40.81	33	24	17	5	20
Sweden	91.65	43	21	20	–	15
Switzerland	97.81	58	15	4	–	22
UK	103.22	40	29	15	4	11
USA	161.89	28	48	11	–	13
Japan	107.30	45	41	3	–	11

Media software spending is up in Norway: although in 1994 the Norwegians spent an average of US$ 113 per capita on media software – the highest figure in Europe, they still spent US$ 49 less than the Americans.

2.2.2.4 Average Expenditure for Pay TV per Capita and Year

in US$

	1990	1991	1992	1993	1994
Austria	0.06	0.08	0.55	1.03	1.51
Belgium	3.13	4.21	7.43	9.24	12.40
Denmark	1.22	1.76	3.09	4.05	6.34
Finland	1.54	1.86	2.13	1.75	3.43
France	19.6	19.83	23.92	22.59	25.03
Germany	0.19	0.89	2.25	3.13	4.29
Italy	–	0.15	1.17	1.99	2.94
Netherlands	1.45	1.87	2.45	2.97	4.35
Norway	1.08	1.55	2.15	2.09	3.03
Spain	0.10	1.58	4.38	5.31	7.03
Sweden	6.66	8.84	16.23	14.39	18.40
Switzerland	3.96	3.62	4.20	3.56	4.03
UK	3.15	3.73	10.01	11.30	15.77
USA	18.91	18.17	18.19	16.87	18.20
Japan	–	0.33	1.46	2.40	3.06

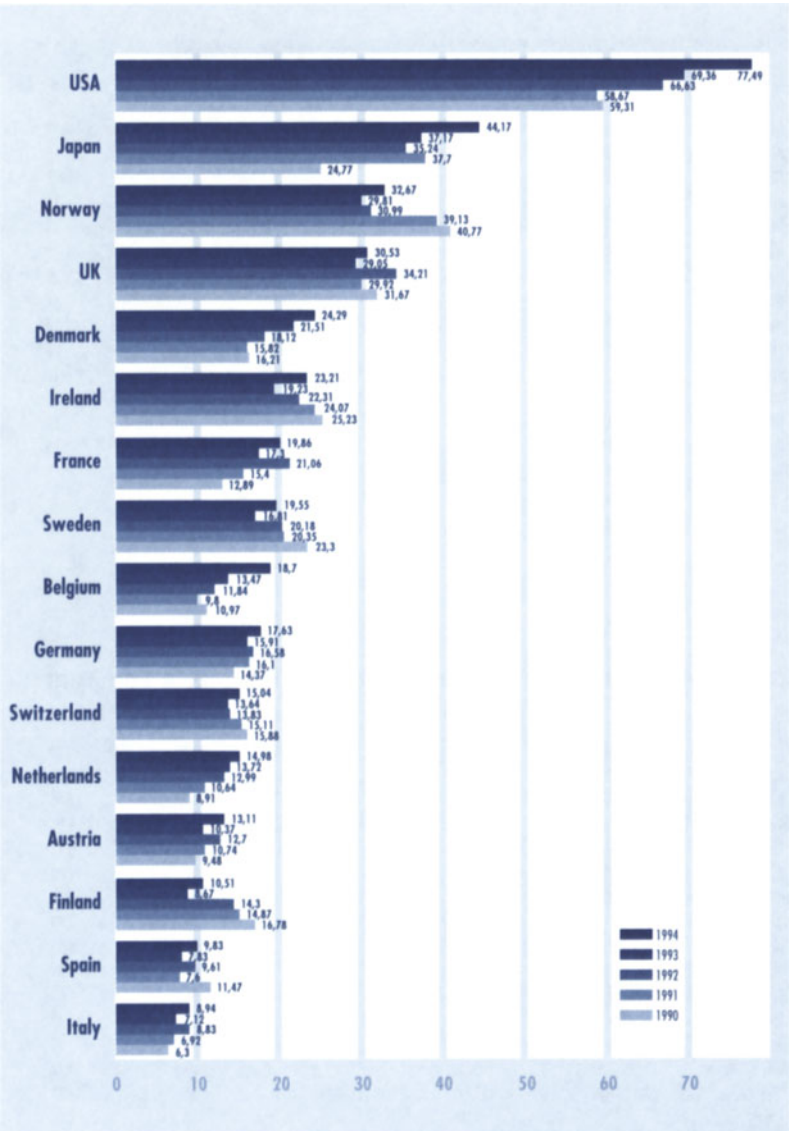
Canal+ makes the most: with US$ 25 average spending per capita in 1994 the French spent more money on Pay-TV than people in Sweden or in the U.S..

Sources

2.2.2.3 Screen Digest, March 1996
2.2.2.4 Screen Digest, March 1996

Spending on video software is much higher in the U.S. than in any European country. Are the Americans better prepared for interactive television?

2.2.2.5 Expenditure on Video Software (Rental and Purchase) per Capita and Year



Sources

2.2.2.5 Screen Digest March 1996; ECC calculations (1997)

2.2.2.6 Spending per Capita on Audio Software Products

In US$ (per year)

	1990	1991	1992	1993		1994
	Source I	Source I	Source I	Source I	Source II	Source I
Austria	23.47	34.26	41.44	43.29	43.3	47.05
Belgium	26.19	30.58	34.43	37.44	40.2	42.10
Bulgaria	n/a	n/a	n/a	n/a	0.2	n/a
Czech Rep.	n/a	n/a	n/a	n/a	4.9	n/a
Denmark	32.43	35.18	40.42	36.83	51.2	53.42
Finland	34.10	31.69	31.38	18.09	22.0	22.79
France	34.95	31.99	35.77	32.63	33.4	34.70
Germany	40.35	47.77	55.89	55.11	35.4	59.25
Greece	n/a	n/a	n/a	n/a	9.7	n/a
Hungary	n/a	n/a	n/a	n/a	4.9	n/a
Ireland	10.08	16.15	18.00	16.45	18.4	18.20
Italy	11.92	11.48	12.16	8.95	9.4	9.42
Netherlands	46.55	45.20	46.08	42.25	41.1	43.00
Norway	29.65	49.22	60.96	49.60	59.5	61.81
Poland	n/a	n/a	n/a	n/a	2.8	n/a
Portugal	n/a	n/a	n/a	n/a	11.0	n/a
Slovakia	n/a	n/a	n/a	n/a	0.9	n/a
Spain	13.98	15.64	16.13	12.14	13.6	13.65
Sweden	35.37	36.03	48.77	35.26	37.9	39.75
Switzerland	43.46	50.28	51.94	51.47	52.7	56.91
UK	40.77	37.04	40.33	34.85	40.9	41.66
USA	29.37	30.47	34.7	38.13	46.0	45.49
Japan	24.43	30.47	35.04	44.84	47.6	47.95

Norwegians, Germans and the Swiss spent between 57 and 62 US dollars per year and capita on audio recordings in 1994, while people in America and Japan spent far less money on this sector.

Sources

2.2.2.6 I. Screen Digest March 1996 : value of sales of audio recordings
II. The IFPI Statistical Handbook 1995: value of sales of Vinyl, MCs and CDs

Switzerland, Norway and Sweden are the European Top-3 spenders per capita on box office movies.

2.2.2.7 Average Spending on Cinema-Going

Per capita and year

	1990		1991		1992		1993		1994	
	Source I	Source II	Source I	Source II	Source I	Source II	Source I	Source II	Source I	Source II
Austria	8.94	6.75	8.58	7.21	8.20	7.39	9.11	8.73	10.65	11.69
Belgium	8.43	8.28	8.11	8.35	8.26	9.31	9.34	9.90	11.74	11.81
Denmark	11.26	10.23	10.20	10.04	10.93	10.15	11.57	11.62	12.84	12.28
Finland	10.02	9.57	8.99	9.10	8.59	7.72	6.63	6.76	7.83	8.74
France	13.23	12.37	12.58	12.09	13.95	12.94	13.96	13.86	13.85	13.26
Greece	n/a	5.14	n/a	4.85	n/a	3.30	n/a	3.54	n/a	n/a
Germany	9.09	6.47	9.62	7.41	9.98	7.11	11.85	8.74	12.96	9.30
Ireland	8.81	9.05	9.54	9.97	10.16	9.82	9.50	9.97	11.44	11.07
Italy	9.30	8.77	9.06	9.28	10.30	9.44	8.21	8.45	8.94	8.91
Luxembourg	n/a	7.70	n/a	8.37	n/a	8.62	n/a	9.78	n/a	10.06
Netherlands	6.67	6.19	6.44	6.49	6.64	6.20	6.83	6.64	7.08	6.73
Norway	15.40	14.45	13.73	13.87	14.44	14.92	13.53	13.43	15.24	17.11
Portugal	n/a	2.02	n/a	1.76	n/a	2.06	n/a	1.97	n/a	2.01
Spain	7.39	7.15	7.42	7.66	9.74	9.10	7.74	8.16	8.35	8.31
Sweden	14.73	15.59	15.69	15.43	18.81	15.80	12.57	13.43	13.94	16.02
Switzerland	17.10	15.95	16.99	17.17	17.95	18.96	19.07	17.87	21.83	21.70
UK	9.03	8.26	9.05	9.08	10.70	9.62	9.39	9.17	11.02	10.74
USA	20.02	n/a	18.97	n/a	19.06	n/a	19.99	n/a	20.71	n/a
Japan	9.54	n/a	9.77	n/a	9.82	n/a	12.22	n/a	12.12	n/a

Sources

2.2.2.7 Screen Digest, March 1996; Eurostat; ECC calculations (1997)
Note: The data refering to source II is calculated on the base of Gross Box office revenues in ECU divided by the number of inhabitants and by the yearly average nominal exchange rates. For most countries there are some taxes included except UK, Sweden, Portugal and Greece. From 1991, the data referring to Germany includes the former East Germany.

2.2.3 Per Household

2.2.3.1 Television Licence Fees in Western Europe

In US$ per year and household

Country	Current Prices											
	1990		1991		1992		1993		1994		1995	
	US $	ECU	US $	ECU	US $	ECU	US $	ECU	US $	ECU	US $	ECU
Austria	108.62	85.32	104.66	84.47	111.81	86.14	107.83	92.07	246.74	207.34	243	186.92
Belgium*	165.27	129.82	164.89	133.08	179.13	138.01	173.47	148.14	210.08	176.54	214	164.61
Denmark	134.16	105.39	139.12	112.28	165.00	127.11	147.82	126.24	188.03	158.01	204	156.92
Finland	149.18	117.19	153.63	124.00	150.05	115.60	115.48	98.62	158.35	133.07	165	126.92
France	41.88	32.90	44.49	35.91	54.28	41.82	50.85	43.42	114.35	96.09	121	93.08
Germany**	74.38	58.44	60.87	49.13	90.48	69.71	89.56	76.48	177.17	148.88	176	135.4
Ireland	73.58	57.80	74.11	59.81	76.64	59.04	66.26	56.58	92.95	78.11	93	71.54
Italy	73.30	57.58	78.29	63.19	83.39	64.24	64.36	54.96	96.71	81.27	98	75.38
Netherlands	77.27	60.70	76.47	61.72	90.04	69.37	89.08	76.07	101.94	85.66	103	79.23
Norway	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	188.00	157.98	201	154.61
Sweden	80.48	63.22	80.36	64.86	95.33	73.45	90.69	77.44	187.96	157.95	187	143.84
Switzerland	87.28	68.57	n/a	n/a	n/a	n/a	n/a	n/a	214.51	180.26	178	136.92
UK	90.11	70.78	98.24	79.29	105.88	81.57	96.54	82.44	129.80	109.07	130	100

The Austrian television licence fee appears to be the highest in Europe. Over the last five years most European households experienced significant growth in TV licence fees; only in Finland, Ireland, Italy and the Netherlands did not TV fees grow excessively.

2.2.3.2 Expenditure of Pay-TV-Subscribing Households on Pay TV

Per household and year in US$

	1990	1991	1992	1993	1994	1995
Austria	140.00	118.00	200.96	240.43	280.49	250.00
Belgium	300.87	263.69	309.07	292.47	361.92	321.13
Czech Rep.	n/a	n/a	n/a	n/a	n/a	50.00
Denmark	249.20	226.00	317.20	276.80	406.37	270.00
Finland	368.09	334.28	307.71	210.71	363.54	320.75
France	364.60	336.40	381.32	348.14	371.16	345.00
Germany	137.21	191.67	256.21	263.27	302.34	259.48
Greece	255.00	270.00	275.00	230.00	157.77	125.00
Hungary	n/a	4.00	36.95	46.87	65.30	90.91
Ireland	n/a	n/a	n/a	n/a	n/a	183.33
Italy	n/a	86.20	272.44	192.58	263.75	287.50
Netherlands	276.67	285.71	350.67	289.80	366.67	300.00
Norway	227.50	263.20	304.00	254.86	341.05	304.34
Poland	n/a	n/a	n/a	n/a	n/a	71.43
Spain	46.36	225.18	312.04	277.34	291.70	274.19
Sweden	293.19	226.27	303.16	245.00	270.81	278.79
Switzerland	287.03	241.72	278.90	269.77	298.12	260.87
UK****	193.26	229.44	511.38	359.39	423.62	86.76***

Pay-TV-subscribing households are willing to spend a lot of money on the service. In Belgium, Finland and France, households spent more than US$ 320 in 1995 for Pay-TV, while the TV licence fee in these countries was between US$ 165 and 214.

Sources

2.2.3.1 TBI Yearbook (1996); The European Media Map (1996); Eurostat; OECD; ECC calculations (1997)

2.2.3.2 Screen Digest November 1995; European Television - Cable and Satellite (1996); ECC calculations (1997)

* Belgian households pay an additional cable TV or radio licence.

** The German data of 1994 includes only the western Länder.

*** Figure refers to cable homes only!

**** Due to the fact that Sky and BSB merged in November 1990 the number of subcribers differ. The data used assumes that 80 percent of new BSkyB movie subscribers joined both movie channels; churn rate of old subscribers is 20 percent.

2.3 Household Equipment

2.3.1 Equipment in Households

2.3.1.1 Penetration Rate of Different Media in the Household

Figures in percent of total number of households (1994)

	CD player	Colour TV	VCR	Teletext	Remote Control
Austria	45.0	98	58	49	80
Belarus	n/a	84	12	n/a	21
Belgium	75.5	95	46	24	79
Bulgaria	n/a	78	30	n/a	n/a
Czech Rep.	n/a	87	30	17	50
Denmark	76.1	96	58	59	85
Finland	44.3	95	65	52	70
France	83.9	98	64	n/a	88
Germany	98.5	98	59	62	93
Greece	17.2	96	54	n/a	95
Hungary	n/a	78	34	18	59
Ireland	17.3	95	58	22	68
Italy	25.1	97	48	32	95
Netherlands	127.3	99	62	65	85
Norway	64.0	96	59	61	79
Poland	8.0	83	49	n/a	n/a
Portugal	24.9	95	64	n/a	63
Russia	n/a	89	25	n/a	n/a
Spain	36.9	98	58	20	79
Sweden	78.9	95	65	60	82
Switzerland	124.2	95	61	55	n/a
UK	73.8	97	74	52	81

Colour TV sets, in Western Europe a commodity of virtually every household, are widespread in Eastern Europe too. The figures for VCRs and CD-player figures show deeper gaps: Only a quarter of Russian households own a VCR, only 8 percent of Polish households have a CD-player.

2.3.1.2 Digital Household Equipment, 1994

% of households with...	USA	Japan	Germany	France	UK
PC	37	12	28	15	24
Fax	10	8	4	3	2
PC modem	15	n/a	3	1	4
Digital main line ('93)	65	72	37	86	75
Cable	65	n/a	47	9	4

About 40 percent of all households in the US have their own PCs. In 1994, the connectivity rate (a PC with a modem) was remarkably low in Europe compared to the U.S..

Sources

2.3.1.1 IFPI (1995), IP Group (1995)
2.3.1.2 OECD; IDCT; The Economist 28.10.1996, p. 44

2.3.1.3 Multimedia Access: Main Lines, Television Sets and Personal Computers per 100 Inhabitants, 1994

Country	Media density per 100 inhabitants			World Rank	Media density per 100 inhabitants			
	Telephone (1994)	TV (1994)	PC (1994)		Mobile phone (1995)	Internet access (1995)	PC (1995)	PC (1996)
USA	59.5	79	29.7	1	6.3	1.7	n/a	n/a
Denmark	60.4	55	19.3	2	n/a	n/a	28	35
Sweden	68.3	48	17.2	4	9.7	1.2	27	34
France	54.7	58	14.0	5	0.1	0.2	n/a	n/a
Switzerland	59.7	41	28.8	5	3.9	0.9	35	43
Netherlands	50.9	48	15.6	8	n/a	n/a	24	29
Germany	48.3	55	14.4	9	2.1	0.4	19	24
Japan	47.8	64	12.0	10	1.7	0.1	n/a	n/a
UK	48.9	45	15.1	11	3.4	0.5	20	25
Austria	46.5	48	10.7	12	n/a	n/a	n/a	n/a
Belgium	44.9	47	12.9	12	n/a	n/a	n/a	n/a
Italy	42.9	45	7.2	16	n/a	n/a	n/a	n/a
Spain	37.1	42	7.0	17	n/a	0.17	n/a	n/a
Hungary	17.0	42	3.4	20	n/a	n/a	n/a	n/a
Czech Republic	20.9	39	3.6	21	n/a	n/a	n/a	n/a
Greece	47.8	22	2.9	23	n/a	n/a	n/a	n/a
Portugal	35.0	25	5.0	24	n/a	n/a	n/a	n/a
Poland	13.1	30	2.2	26	n/a	n/a	n/a	n/a
Russia	16.2	38	1.0	26	n/a	n/a	n/a	n/a
Turkey	20.1	27	1.1	29	n/a	n/a	n/a	n/a
China	2.3	23	0.2	36	n/a	n/a	n/a	n/a
Overall Avg.	14.5	27	4.3	–	–	–	–	–

The U.S. had the highest figures for the number of PCs, TVs and telephones per 100 inhabitants, while Denmark and Sweden reached in a worldwide comparison the ranks two and four. Countries which are otherwise perceived as technologically advanced like Japan, Germany or the UK only reached ranks in the middle.

2.3.2 Spending on Equipment

2.3.2.1 Sales of Audiovisual Entertainment Products in Europe

In thousand units

	1990	1991	1992	1993	1994	1994/93 Change
TV-Sets	20,123	20,065	20,404	20,173	20,075	- 0.5 %
VCR	11,581	11,069	11,358	10,821	10,834	0.1 %
Video Game consoles	2,890	12,825	14,575	10,650	7,185	- 33 %
PC	1,160	1,520	1,620	2,296	4,068	77 %
Camcorder	2,102	2,430	2,296	4,131	2,938	- 29 %
CD-ROM Drive	0	4	50	431	2,280	429 %
CD-I Player	–	–	40	115	210	83 %
LaserDisc Player	n/a	69	91	110	143	30 %
16:9 TV-Sets	–	4	35	92	133	45 %

While the markets for TV sets and VCRs stagnated, the markets for video game consoles and camcorders dropped. But computer and multimedia equipment enjoyed a significant rise.

Sources

2.3.1.3 ITU (1995); VDMA/ZVEI; Computer Zeitung 8/1996, 20/1996; ECC research (1997)
2.3.2.1 European Audiovisual Observatory; BIPE Conseil; EACEM; GfK; Screen Digest (1996)

The European market for TV sets shows different developments, as sales in Italy, Belgium, Germany, Greece or Portugal went down in 1994, while Sweden and Switzerland showed serious growth rates of up to 18 percent.

2.3.2.3 Spendings on TV-Sets by Private Households by Country

In million ECU

country	1990	1991	1992	1993	1994	1994/93 Change
Austria	305	324	298	303	313	3 %
Belgium	314	310	318	308	288	- 6 %
Denmark	222	202	186	184	189	3 %
Finland	205	216	156	162	167	3 %
France	2,370	2,100	2,039	1,954	1,895	- 3 %
Germany	3,688	3,156	3,160	3,191	3,049	- 4 %
Greece	418	241	234	229	219	- 4 %
Ireland	59	59	62	56	59	5 %
Italy	1,914	1,687	1,485	1,176	1,026	- 13 %
Luxembourg	14	14	14	14	12	- 14 %
Netherlands	546	526	517	492	504	2 %
Norway	124	142	170	146	151	3 %
Portugal	217	233	237	207	196	- 5 %
Spain	1,133	1,159	944	835	834	0 %
Sweden	389	366	307	248	283	14 %
Switzerland	389	397	388	347	411	18 %
UK	1,385	1,338	1,219	1,095	1,114	2 %
EU	13,154	11,909	11,153	10,431	10,128	- 3 %

Sales for video-game consoles dropped in Europe, Japan and the U.S. by between 15 and 33 percent in 1994. This is one explanation for the 64bit-frenzy of the suppliers, offering ever faster and better game consoles.

2.3.2.4 Sales of Video-Game Consoles

In million units

country	1990	1991	1992	1993	1994	1994/93 Change
Europe	2.9	12.8	14.6	10.7	7.2	-33 %
Japan	6.2	7.2	6.3	5.2	3.7	-29 %
USA	13.8	10.2	14.2	13.7	11.7	-15 %
Total	22.9	30.1	35.1	29.6	22.6	-24 %

Sources

2.3.2.3 BIPE Conseil; GfK; European Audiovisual Observatory (1995)
2.3.2.4 BIPE Conseil; GfK; IMA; Screen Digest; European Audiovisual Observatory (1995)

2.3.2.5 CD-ROM: Number of Produced Titles and Sales Worldwide

	Number of Titles			
	1993	1994	1995	95/94 Change
CD-ROM	n/a	5,379	5,840	9 %
CD-ROM for MS-DOS	n/a	n/a	4,003	n/a
CD-ROM for Apple	n/a	n/a	1,704	n/a
CD-ROM for Windows	n/a	n/a	1,324	n/a
CD-I	n/a	264	368	39 %
CDTV/CD 32	n/a	120	77	- 36 %
VIS	n/a	58	28	- 52 %
MMCD	n/a	35	48	37 %
3DO	n/a	33	58	76 %
Electronic Book	n/a	298	298	0 %
Total	n/a	6,300	9,500	51 %
Units saled (in millions)	n/a	n/a	n/a	n/a
according to Dataquest	16.3	53.9	n/a	n/a
according to Info Tech	35.2	92.0	n/a	n/a
Value (billion US$)	n/a	10.7	18.1	69 %
Average price (US$) of ...	n/a	n/a	n/a	n/a
Reference titles	n/a	342	244	- 29 %
Entertainment	n/a	50	n/a	n/a

2.3.2.6 Number of Households with Video-Game Consoles

Figures in millions

country	1990	1991	1992	1993	1994	1994/93 Change
Europe	4.5	17.3	31.9	41.1	46.3	13 %
Japan	12.3	19.4	27.1	34.9	37.6	8 %
USA	31.3	41.5	49.4	53.8	57.9	8 %
Total	48.1	78.2	108.4	129.8	141.8	9 %

The number of CD-ROM titles is expanding rapidly, with more than 50 million units sold in 1994 and a value of US$ 18.1 billion in 1995.

Sources

2.3.2.5 TFPL CD-ROM Directory; Dataquest; Info Tech; European Audiovisual Observatory (1995). Figures appear questionable.

2.3.2.6 BIPE Conseil; GfK; IMA; Screen Digest; European Audiovisual Observatory (1995)

One fifth of all CD-ROM titles offered concentrate on leisure time entertainment. These titles also had the highest growth rates from 1993 to 1994.

2.3.2.7 CD-ROM Titles Offered Worldwide

	1993	1994	Change in %
General, Leisure Time	600	1,043	73.8
Arts, Culture	447	724	61.9
Languages, Linguistics	258	417	61.6
Business/Company Information	265	426	60.7
Advertising, Design, Marketing	280	429	53.2
Jobs, Career	424	631	48.8
Science, Technology	280	386	37.8
Law	297	399	34.4
Geography, Maps	282	332	26.7
Encyclopaedia	106	131	23.6
Economy, Finance	249	302	21.3
Total	3,488	5,220	49.7

More than one third of British households own a video game console, while in Europe on average only one fifth of the households have a console.

2.3.2.8 Video Games - Hardware, 1994

Number of consoles in private households, figures in thousands

country	Number of consoles	Households with consoles	Number of households with consoles
Austria	921	19 %	580
Belgium	974	19 %	731
Denmark	509	13 %	285
Finland	394	14 %	288
France	7,283	21 %	4,734
Germany	11,958	21 %	7,474
Ireland	357	20 %	214
Italy	2,763	10 %	1,989
Luxembourg	47	20 %	31
Netherlands	2,004	21 %	1,242
Norway	503	21 %	377
Spain	3,275	22 %	2,489
Sweden	1,081	20 %	757
Switzerland	846	19 %	524
UK	13,233	34 %	7,940
EU 15	44,798	20 %	28,753

Sources

2.3.2.7 TFPL; Media Perspektiven 10/95, p. 491
2.3.2.8 BIPE Conseil; GfK; Screen Digest; European Audiovisual Observatory (1995)

2.4 Preferences

2.4.1 Which Type of Programme Viewers Would Like to See More on TV

In percent

Full length movies are the top TV programme almost all over Europe. Domestic news, comedy shows and information programmes are also favoured by viewers.

	Western Europe												Eastern Europe					North America	World-wide
	AUS	BEL	FRA	GER	GRE	IRL	ITA	NED	NOR	SPA	SWE	UK	CZR	HUN	POL	RUS	UKR		
Full length movies	54.7	59.9	69.3	56.5	50.5	50.1	76.2	52.9	40.6	68.9	35.4	50.2	76.2	62.7	58.2	86.7	87.7	55	60
Domestic news	48.4	28.0	65.8	43.5	70.5	43.1	48.2	26.1	45.2	69.6	29.4	26.2	44.2	37.8	49.7	56.8	62.4	25	57
Comedy shows	33.9	40.9	64.1	28.8	54.2	43.5	42.9	46.3	38.2	46.2	31.4	38.5	60.8	67.3	55.5	63.6	63.5	35	53
Information programmes	29.8	37.5	74.5	35.5	47.0	33.1	79.2	40.8	48.0	56.1	44.1	47.2	51.3	71.5	68.0	32.1	36.4	39	48
Sports events	28.9	28.1	38.5	27.4	32.9	31.5	38.4	24.8	18.0	39.1	24.9	27.9	42.5	34.5	36.0	28.9	32.0	25	42
Variety	9.3	24.5	38.2	9.0	27.6	27.6	21.1	20.5	21.0	34.3	34.4	19.3	26.2	23.3	61.3	47.3	47.3	25	41
Police shows	28.3	35.2	49.7	35.5	25.2	31.6	46.1	29.6	15.5	27.8	18.8	25.5	51.7	28.0	30.5	46.2	46.5	19	39
Foreign prod news	32.2	21.9	35.3	32.0	39.7	25.5	49.0	10.3	30.0	38.4	21.8	20.4	27.7	28.3	37.5	19.0	38.0	13	37
Magazine/talk shows	22.6	32.6	53.5	25.7	28.7	23.7	35.3	16.6	36.7	45.8	23.0	21.3	28.4	22.3	29.5	19.3	24.6	13	33
Cultural	12.1	15-2	33.1	17.1	22.3	11.2	39.4	16.2	13.1	28.4	14.9	19.2	20.6	27.8	37.3	11.1	15.0	17	29
Music videos	14.6	17.7	30.2	13.0	18.9	16.0	34.4	12.7	9.8	24.3	6.9	19.1	27.7	20.0	22.3	26.0	21.9	09	29
Cartoons	12.8	14.7	40.2	12.0	11.7	8.0	39.0	18.9	12.4	18.5	6.5	10.4	13.5	30.7	22.8	32.2	30.1	07	26
Soap operas	26.8	20.6	15.3	21.7	14.4	20.8	2.2	9.8	4.8	13.9	2.5	10.2	20.6	10.7	19.2	43.7	51.4	08	25
Children's	9.2	11.0	37.4	8.4	10.1	11.3	23.5	7.9	13.4	18.1	6.5	10.3	30.4	29.8	25.2	14.2	14.8	02	23
Religious	7.9	4.0	12.6	4.0	19.4	12.3	6.3	5.3	9.3	13.3	5.1	8.5	5.1	13.0	19.7	5.8	18.8	10	20

Sources

2.4.1 INRA/TV World 11/95. Survey collated from 500 to 1000 respondents per country by member companies of the International Research Associates (INRA), co-ordinated by Sample Institute, Germany. North America contains the US and Canada. No separate data for Japan was available.

Objectivity is relatively unimportant for programme popularity. France, Italy and Poland seem to have the highest overall expectations of their programmes.

2.4.2 Attributes of Favourite TV Programmes

Expressed as a percentage of respondents

	Western Europe												Eastern Europe					North	World-
	AUS	BEL	FRA	GER	GRE	IRL	ITA	NED	NOR	SPA	SWE	UK	CZR	HUN	POL	RUS	UKR	America	wide
Interesting	66.4	64.4	88.7	76.9	79.4	67.9	86.8	54.2	70.2	78.0	70.4	75.4	77.4	69.2	80.2	82.7	87.6	64	73
Educational	43.3	35.9	58.8	50.1	53.2	35.9	51.0	38.1	62.1	53.3	30.9	45.6	45.8	40.3	54.3	30.5	40.5	42	56
Relaxing	44.1	68.4	55.2	53.3	32.2	45.3	48.0	72.0	47.9	41.1	52.2	41.8	73.1	54.7	60.7	36.7	41.1	38	50
Lots of fun	46.5	32.6	69.5	39.1	64.2	32.3	44.7	24.3	24.5	56.3	48.9	32.7	56.0	64.2	50.2	39.5	43.3	27	47
Family oriented	24.7	27.3	51.5	23.4	32.9	26.1	16.4	9.5	16.1	41.2	22.2	28.8	19.3	26.0	37.8	33.0	29.8	27	44
Realistic	25.1	21.8	55.8	29.9	19.2	30.5	41.2	17.8	23.7	33.0	25.0	41.4	21.1	20.8	41.2	16.6	25.2	25	39
Original	24.7	29.7	49.9	33.1	14.0	23.9	60.3	23.5	7.9	36.8	10.7	35.0	34.9	35.8	53.5	32.2	30.9	21	38
Non-violent	30.9	26.4	51.0	37.9	23.9	34.9	39.9	20.4	26.8	50.7	28.3	30.6	47.5	39.5	54.7	35.8	35.3	24	35
Imaginative	19.3	17.9	44.7	30.4	8.2	28.0	43.8	14.9	15.2	34.9	13.4	33.5	17.6	25.7	53.2	32.9	28.3	26	35
Exciting	42.6	20.6	55.1	54.1	25.8	26.7	45.0	12.8	43.3	31.9	45.1	32.7	37.9	45.0	36.3	8.2	6.4	30	34
Stimulating	27.1	15.7	38.8	34.2	16.6	26.0	57.4	11.0	24.3	26.3	35.4	36.5	20.8	14.2	24.0	4.2	7.5	31	31
Objective	25.2	14.7	48.2	28.4	32.6	13.4	51.9	11.2	12.3	29.0	26.9	19.0	36.2	29.8	56.8	8.2	11.7	7	30

Sources

2.4.2 INRA/TV World 11/95. Survey collated from 500 to 1000 respondents per country by member companies of the International Research Associates (INRA), coordinated by Sample Institute, Germany. North America contains the US and Canada. No separate data for Japan was available.

3. Publishing Industry

3.1 Reach and Number of Newspapers per 1,000 Inhabitants

As of 1995

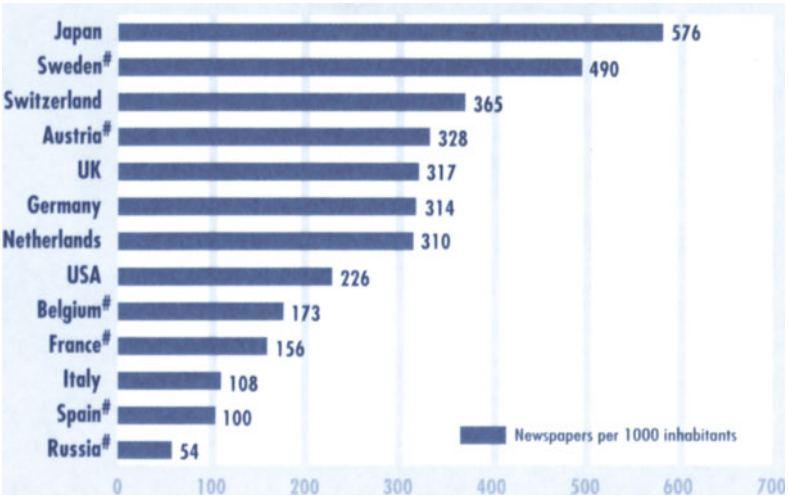
Young people in Southern Europe read much less than people of their age group in middle or northern Europe.

Country	Newspapers per 1,000 inhabitants	Percentage of population over age 14 or 15 reached
Austria	328 #	75
Belgium	173 #	56
Denmark*	n/a	74
Finland*	n/a	87
France	156 #	53
Germany	314	81
Greece	n/a	47
Ireland	n/a	63
Italy	108	45
Netherlands	310	72
Norway*	n/a	85
Portugal	n/a	26
Russia	54 #	n/a
Spain	100 #	38
Sweden*	490 #	83
Switzerland	365	87
UK**	317	85
Japan	576	n/a
USA	226	n/a

3.2 Daily Newspapers Published per 1,000 Inhabitants

As of 1995

Statistically, for every second person in Japan there is a newspaper each day, while these figures are much lower in Italy or Spain.



Sources

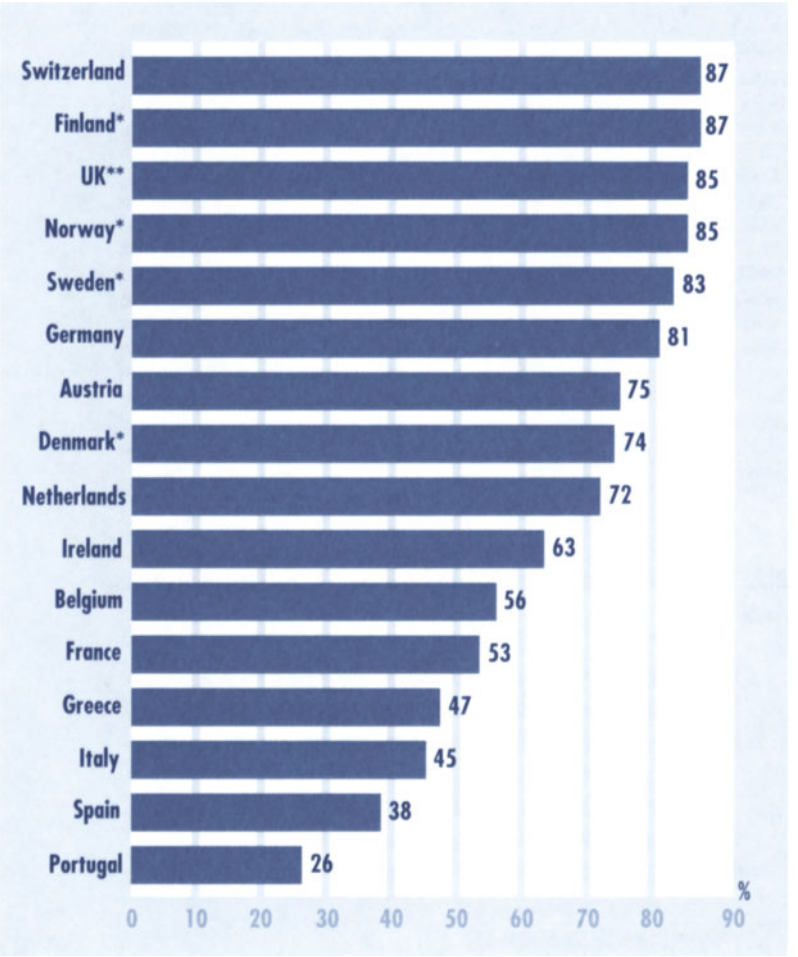
3.1 AG.MA; ENPA; FIEJ (1994); European Newspaper Minibook; BDZV (1996); ECC (1997)
3.2 FIEJ (1994); BDZV (1996); ECC (1997)

\# Figures for 1993
* Sweden and Norway: population over 9 years, Finland and Denmark population over 13 years
** The reach of nationwide newspapers is 60 percent.

Especially the North of Europe and Switzerland read heavily, with more than 80 percent of the population reached by daily newspapers. In Southern Europe only less than half of the population can be reached by newspapers.

3.3 Daily Newspapers: Percentage of Population Reached

Population over the age of 14 or 15; in percent



Sources

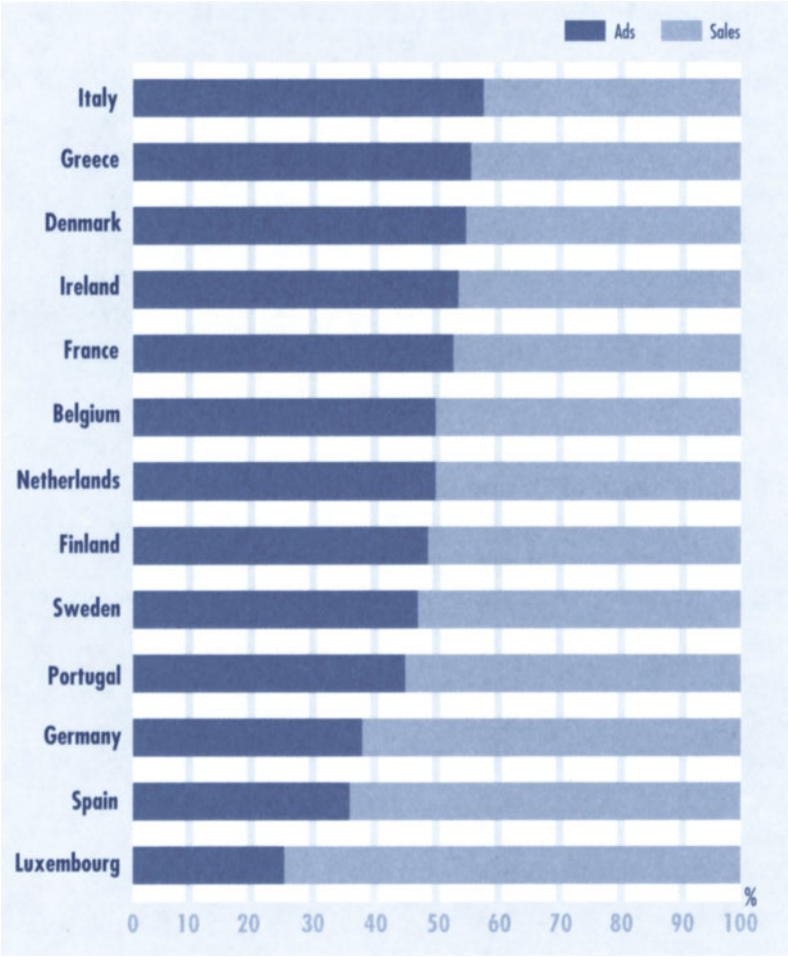
3.3 FIEJ (1994); BDZV (1996); ECC (1997)

* Sweden and Norway: population over 9 years, Finland and Denmark population over 13 years

** The reach of nationwide newspapers is 60 percent.

3.4 Share of Revenue Sources in European Publishing

In percent



Advertising revenues are calculated on price lists. Due to high discounts, especially in Southern Europe, net figures might differ significantly.

Sources

3.4 FIEJ; BDZV (1996)
Note: The sources did not indicate an exact year.

With more than 1,100 newspapers published per thousand households, Sweden is on top of the European list: Each day, there are as many daily newspapers published in Sweden – with a population of only 8.7 million – as in England with more than 57.8 million.

3.5 Newspaper Titles in Europe, 1993

	Number of newspapers published			Readers per copy	Number of newspapers per 1,000 households
	Daily	Weekly	Sunday		
Austria	17	140	n/a	2,2	845
Belgium	35	n/a	n/a	3,3	445
France	94	287	23	3,3	399
Germany	414	31	9	2,5	737
Italy	83	n/a	n/a	4,0	325
Netherlands	44	63	n/a	2,4	778
Spain	126	n/a	20	3,0	340
Sweden	103	73	n/a	1,9	1,112
UK	103	751	19	2,4	878

Different consumption habits: While Northern and Middle European countries read more newspapers (with a daily reach of over 80 percent), the daily reach of television is above 75 percent in most of Southern Europe.

3.6 Daily Reach of TV and Daily Newspapers

	Daily Reach of Daily Newspapers	Daily Reach of TV
Austria	71 - 80 %	< 75 %
Belgium	61 - 70 %	75 - 85 %
Denmark	71 - 80 %	< 75 %
Finland	> 80 %	< 75 %
France	< 61 %	75 - 85 %
Germany	> 80 %	< 75 %
Greece	< 61 %	> 85 %
Ireland	61 - 70 %	> 85 %
Italy	61 - 70 %	75 - 85 %
Netherlands	71 - 80 %	< 75 %
Norway	> 80 %	< 75 %
Portugal	< 61 %	< 75 %
Spain	< 61 %	> 85 %
Sweden	> 80 %	75 - 85 %
UK	> 80 %	75 - 85 %

Sources

3.5 FIEJ (1994); Statistisches Jahrbuch für das Ausland (1994); BDZV; ECC (1997)
3.6 Young & Rubicam; European Commission (1996): Electronic Publishing

4. Recording Industry

4.1 World Audio Market,1992-1995

Market value in million US$; CDs, Cassettes, LPs

Europe accounts for roughly a third of the world audio software market with a value of US$ 13,391 million in 1995.

country	Legitimate audio sales (million US$)				Audio piracy level as % of total...		
	1992	1993	1994	1995	1992 units	1995 units	1995 market value
Austria	294.4	318.5	346.3	409.4	1	2	1
Belgium	320.6	378.0	403.7	474.6	4	4	4
Czech Rep.	30.9	44.4	50.6	75.1	n/a	6	5
Denmark	192.0	190.0	265.6	306.3	1	1	1
Finland	135.7	96.7	111.6	142.8	1	2	2
France	1,936.0	1,848.5	1,988.1	2,391.8	3	3	2
Germany	2,638.2	2,690.7	2,876.5	3,269.6	7	3	3
Greece	94.6	93.6	100.7	131.0	20	26	19
Hungary	31.4	42.3	50.4	64.5	n/a	17	23
Ireland	61.6	63.2	65.5	77.1	7	5	2
Italy	596.6	519.3	534.7	582.7	15	33	20
Netherlands	647.5	618.8	629.4	716.5	9	6	6
Norway	232.6	208.2	256.3	290.8	5	4	2
Poland	64.7	66.2	108.2	88.7	n/a	22	19
Portugal	74.0	107.0	108.4	140.2	8	0.3	0.3
Russia	186.9	127.4	131.4	224.3	n/a	73	62
Spain	569.0	493.7	530.9	557.3	2	2	1
Sweden	348.6	313.1	332.0	381.6	3	3	3
Switzerland	322.0	329.5	365.6	449.2	5	4	4
UK	1,998.5	1,976.0	2,366.4	2,571.6	3	1	1
Total Europe	10,787.9	10,538.9	11,622.3	13,391.0	14	n/a	n/a
Japan	4,328.3	5,082.4	6,392.7	7,552.1	n/a	n/a	n/a
USA	8,866.6	9,833.1	11,836.9	12,102.0	n/a	3	2

Sources

4.1 MPA; Screen Digest, August 1996; IFPI (1996)

While the number of singles sold in the UK is extraordinarily high, Germans buy roughly one third of all CDs sold in Europe.

4.2 Audio Software – European Sales, 1994

country	Units (millions)				Value
	Singles	LPs	MCs	CDs	mUS$
Austria	3.1	0.1	2.7	15.6	346.3
Belgium	3.5	–	1.3	18.8	403.7
Czech Rep.	0.1	0.3	3.8	3.6	50.6
Denmark	0.7	0.4	1.6	13.6	265.6
Finland	0.4	0.1	3.8	5.8	111.6
France	16.3	0.1	27.7	95.2	1,988.1
Germany	40.3	0.8	40.4	178.8	2,876.5
Greece	–	2.2	1.2	3.5	100.7
Hungary	0.02	0.01	4.1	1.5	50.4
Ireland	0.9	0.01	2.0	1.9	65.5
Italy	4.4	–	15.3	28.1	534.7
Netherlands	5.9	0.3	1.3	34.6	629.4
Norway	1.4	–	2.4	12.2	256.3
Poland	–	–	23.0	3.5	108.2
Portugal	0.05	0.1	4.2	6.1	108.4
Russia	–	1.5	50.0	4.0	131.4
Spain	0.9	2.0	19.8	34.2	530.9
Sweden	2.8	0.1	2.6	21.9	332.0
Switzerland	2.1	0.1	3.1	20.6	365.6
UK	63.0	4.5	56.0	116.4	2,366.4
Total	146.1	12.6	267.0	620.5	11,622.3
Annual growth in %	7.6	-33.7	15.3	18.4	11.5
Europe as % of world sales	37.4	33.5	19.4	35.6	32.7

Sources

4.2 IFPI (1995)

4.3 The Piracy Market in Europe

country	Video Piracy as % of market				Audio piracy level as % of total			Audiovisual piracy losses (estimates)		
	1992	1993	1994	1995	1992 units	1995 units	1995 market value	1993 (mUS$)	1994 (mUS$)	1995 (mUS$)
Austria	2	2	10	n/a	1	2	1	n/a	10	15
Belgium	9	7.6	8.2	n/a	4	4	4	7	6.2	9.5
Czech Rep.	n/a	50	35	n/a	n/a	6	5	n/a	n/a	n/a
Denmark	5	5	5	n/a	1	1	1	n/a	n/a	n/a
Finland	2	5	5	n/a	1	2	2	n/a	1.3	1.3
France	10	10	10	n/a	3	3	2	48	50	50
Germany	5 - 10	15	16	n/a	7	3	3	53	53	50
Greece	n/a	40	25	n/a	20	26	19	55	55	59.8
Hungary	n/a	80	70	n/a	n/a	17	23	n/a	n/a	n/a
Ireland	37	34	20	n/a	7	5	2	7	7	7
Italy	20	40	40	n/a	15	33	20	357	321	294
Netherlands	10	10	15	n/a	9	6	6	25	14.5	28
Norway	5	5	5	n/a	5	4	2	n/a	n/a	n/a
Poland	n/a	n/a	n/a	n/a	n/a	22	19	n/a	n/a	n/a
Portugal	20	25	25	n/a	8	0.3	0.3	15	10	15
Russia	n/a	n/a	n/a	n/a	n/a	73	62	n/a	n/a	n/a
Spain	12	8	6	n/a	2	2	1	53	55	58
Sweden	5	5	2	n/a	3	3	3	n/a	n/a	n/a
Switzerland	10	8	7	n/a	5	4	4	11	10.8	10
UK	20	20	20	n/a	3	1	1	90	112	112
Total Europe	n/a	n/a	n/a	n/a	14	n/a	n/a	756	760.8	766.6
Japan	7	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
USA	n/a	n/a	10	n/a	n/a	3	2	n/a	n/a	n/a

For the media industry, piracy appears to be a problem especially in some Eastern European countries like Russia (with more than 70 percent of audio software sold illegally) or Hungary (with more than 70 percent video piracy). Overall European piracy losses were estimated at US$ 766.6 million in 1995.

Sources

4.3 MPA; Screen Digest, August 1996; IFPI (1996); European Audiovisual Observatory (1995)

With a piracy level of about 30 percent, cassettes seem to be the medium of choice for unlawful copying in Europe.

4.4 Audio Piracy Sales by Format, 1992

country	Legitimate Cassettes (millions)	Pirate Cassettes (millions)	Pirate Cassette share (%)	Legitimate CD units (millions)	Pirate CD units (millions)	Pirate CD units share (%)
Austria	3.3	0.1	1	9.6	0.1	1
Belgium	2.6	0.3	9	14.1	0.5	3
Denmark	1.5	0.1	1	6.5	0.1	1
Finland	4.6	0.1	2	5.5	0.1	1
France	35.5	1.0	3	78.5	2.4	3
Germany	55.6	8.1	13	125.9	6.1	5
Greece	1.9	2.0	51	1.8	0.0	0
Ireland	2.3	0.3	11	1.1	0.0	0
Italy	21.2	7.0	25	23.6	1.5	6
Netherlands	1.8	0.5	28	33.2	3.0	9
Norway	4.5	0.2	4	11.0	0.5	4
Portugal	1.7	0.4	19	2.8	0.1	2
Spain	21.3	0.7	3	20.1	0.1	0
Sweden	4.5	0.1	3	15.4	0.5	3
Switzerland	3.8	0.2	5	13.7	0.7	5
UK	56.4	3.4	6	70.5	0.7	1
Total	250.3	103.1	29	438.9	18.1	4

With about 20 percent in Greece and 15 percent in Italy, audio piracy in these countries is significantly higher than in most other European countries.

4.5 Pirate Audio Software Sales, 1992

Estimates; CD, Cassette, LP

country	Legitimate sales (mUS$)	Pirate sales (mUS$)	Total sales (mUS$)	Legitimate unit sales (millions)	Pirate unit sales (millions)	Pirate % of total unit sales
Austria	294.4	1.9	296.3	14.6	0.2	1
Belgium	320.5	9.5	330.0	18.0	0.8	4
Denmark	192.0	1.7	193.7	10.3	0.1	1
Finland	135.7	2.5	138.2	12.9	0.2	1
France	1,935.4	39.8	1,975.2	119.9	3.4	3
Germany	2,638.2	121.0	2,759.2	195.4	14.5	7
Greece	61.5	10.3	71.8	7.8	2.0	20
Ireland	61.6	2.0	63.6	3.7	0.3	7
Italy	653.8	105.1	758.9	48.0	8.8	15
Netherlands	647.4	53.8	701.2	37.0	3.5	9
Norway	232.5	6.7	239.2	16.1	0.8	5
Portugal	102.3	2.0	104.3	5.3	0.5	8
Spain	586.7	7.6	594.3	51.0	0.8	2
Sweden	328.6	14.8	363.4	23.1	0.7	3
Switzerland	321.9	20.0	341.9	18.0	1.0	5
UK	1,998.2	28.3	2,026.5	151.3	4.1	3
Total	10,669.8	556.3	11,226.1	768.3	122.1	14

Sources

4.4 IFPI (1994)
4.5 IFPI (1994); MPA; Screen Digest, August 1996

5. Movie Industry

5.1 Number of Movie Screens, 1990-94

Country	European Audiovisual Observatory						EMMF
	1990	1991	1992	1993	1994	94/93 Change	1994
Austria	390	395	386	386	379	-1.81 %	355
Belgium	411	390	383	409	421	2.93 %	358
Czech Rep.	–	–	–	1,845	1,070	-42.01 %	400
Denmark	347	334	318	309	309	0.00 %	262
Finland	340	333	330	335	326	2.69 %	116**
France	4,518	4,441	4,402	4,397	4,414	0.39 %	4,414
Germany	3,754	3,686	3,630	3,709	3,763	1.46 %	3,678
Greece	500	350	405	280	320	14.29 %	152***
Hungary	1,887	1,025	678	635	497	-21.73 %	134
Ireland	172	192	189	184	191	3.80 %	190
Italy	3,293	3,338	3,522	3,567	3,617	1.40 %	3,100
Luxembourg	17	18	17	17	17	0.00 %	n/a
Netherlands	429	425	425	425	423	-0.47 %	418
Norway	399	428	405	400	394	-1.50 %	637
Poland	1,595	1,195	933	755	773	2.38 %	100
Portugal	276	240	209	n/a	236	n/a	261
Russia	74,988	66,551	n/a	2,282*	2,066*	n/a	2,511#
Spain	1,773	1,805	1,807	1,791	1,930	7.76 %	1,850
Sweden	1,160	1,165	1,168	1,169	1,177	0.68 %	600
Switzerland	398	398	397	415	431	3.86 %	393
UK	1,552	1,642	1,805	1,890	1,969	4.18 %	1,919
EU	**19,464**	**18,754**	**18,996**	**18,907**	**19,492**	**3.09 %**	**23,008**
USA	23,689	24,570	25,105	25,737	26,586	3.30 %	n/a
Japan	1,836	1,804	1,744	1,734	1,747	0.75 %	n/a

The number of cinemas plummeted in Eastern Europe after the cold war.

Sources

5.1 European Audiovisual Observatory (1995); European Market & Media Facts (1996)

* Number of cinemas
** Taking advertising
*** Winter Cinemas; # C.I.S.

Americans love the movies. With 4.5 movies seen per capita and year, they watch more than twice as many movies as the European average of 1.83.

5.2 Average Number of Movies Seen per Capita and Year, 1990-94

Country	1990	1991	1992	1993	1994
Austria	1.31	1.34	1.18	1.51	1.62
Belgium	1.72	1.65	1.65	1.91	2.10
Czech Rep.	n/a	n/a	2.93	2.12	1.25
Denmark	1.87	1.79	1.67	1.97	1.98
Finland	1.24	1.20	1.07	1.13	1.10
France	2.15	2.06	2.01	2.30	2.18
Germany	1.29	1.50	1.31	1.61	1.63
Greece	1.28	0.98	0.63	0.67	0.58
Hungary	3.49	2.10	1.48	1.44	1.55
Ireland	2.11	2.29	2.33	2.61	2.92
Italy	1.60	1.56	1.47	1.62	1.72
Luxembourg	1.41	1.58	1.53	1.76	1.78
Netherlands	0.98	0.99	0.90	1.04	1.04
Norway	2.68	2.53	2.24	2.53	2.67
Poland	1.00	0.47	0.29	0.36	0.44
Portugal	0.97	0.83	0.80	0.74	0.65
Russia	n/a	8.99	n/a	3.29	2.62
Spain	2.02	2.03	2.14	2.24	2.28
Sweden	1.83	1.82	1.72	1.83	1.81
Switzerland	2.13	2.27	2.18	2.29	2.32
UK	1.69	1.73	1.79	1.97	2.14
EU	**1.63**	**1.65**	**1.59**	**1.79**	**1.83**
USA	4.30	4.09	4.15	4.34	4.50
Japan	1.19	1.12	1.01	1.04	0.97

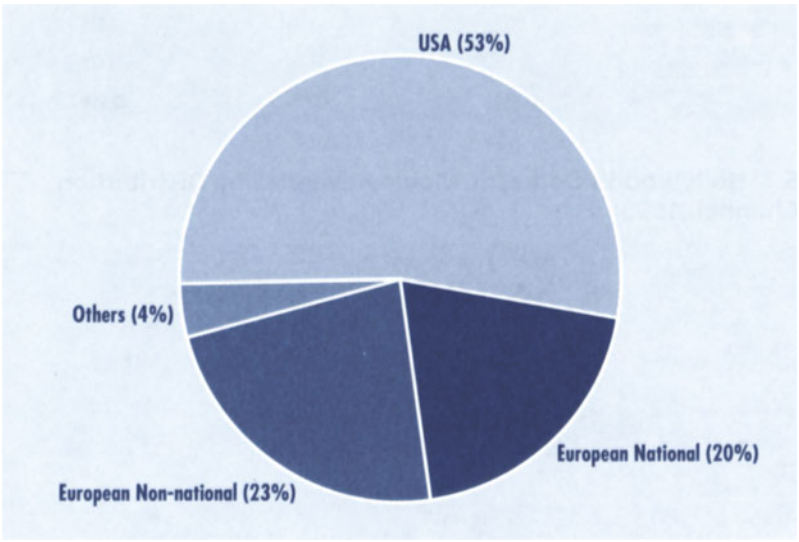
Sources

5.2 European Audiovisual Observatory (1995)

5.3 Origin of Broadcasted Movies in European TV by Country, 1994

	National movies	European non-national movies	US-movies	Others	Total
Austria	47	632	942	67	1,688
Germany	1,484	3,329	5,955	513	11,281
Denmark	45	143	361	21	570
Spain	823	929	3,396	275	5,423
Finland (1993)	117	179	407	33	736
France	444	213	292	34	983
UK	114	35	344	43	536
Italy (1992)	2,597	882	2,968	199	6,646
Netherlands	35	220	733	25	1,013
Total	5,706	6,562	15,398	1,210	28,876

5.4 Origin of Broadcasted Movies in European TV by Country, 1994



Of 29,000 movies shown on European TV, more than 50 percent came from U.S. productions.

Sources

5.3 European Audiovisual Observatory (1995)
5.4 European Audiovisual Observatory (1995)

* = Forecast

Roughly one third of all movie theatres in the U.S., in Japan and in Germany are equipped with advanced digital sound systems.

5.5 Movie Theatres and Their Equipment, 1996

Number of digitally equipped theatres by country

country	Dolby Digital Sound	Digital Theatre Systems	Sony Dynamic Digital Sound	Total Number of Screens '94
France	374	287	40	4,414
Germany	659	455	35	3,763
Italy	120	81	12	3,617
Spain	209	151	45	1,930
UK	186	155	20	1,969
USA/Canada	1,488	3,422	2,180	26,586*
Japan	69	505	24	1,747 **
Total	3,105	5,056	2,345	–

Although the number of films produced reach similar figures in Europe and North America, the revenues of U.S. movie productions are much higher.

5.6 Breakdown of Worldwide Produced Feature-Films

	1970 - 79	1980 - 89	1990 - 99***
Central & Eastern Europe	3,370	3,609	3,250
Western Europe	8,447	6,251	5,754
North America	2,978	4,555	5,230
Rest of the world	20,555	24,490	18,420
Total	35,350	38,905	32,654

With a share of 57 percent of total U.S. domestic revenues for movies, home video (sales and rental) has outnumbered the box office revenues by far.

5.7 Hollywood's Domestic Movie Revenues by Distribution Channel, 1995

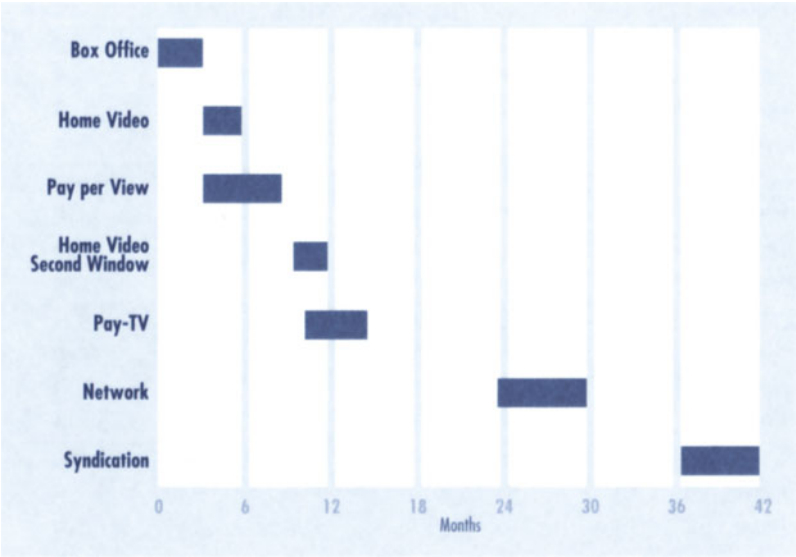
	Revenue in mio. US$	Share in %
Home video	6,175	57
Theatrical box office	2,520	23
Pay TV	1,070	10
Free TV	810	8
Other	90	1
Total	10,665	99

Sources

5.5 Screen International; Manufacturers; European Audiovisual Observatory (1995);
5.6 Screen Digest; European Audiovisual Observatory (1995) Screen Digest July 1996; Eurostat (1995)
5.7 Goldman Sachs; Screen Digest September 1996

* Figures for 1994, USA only
** Figures for 1994
*** Forecast

5.8 Time Frames of Profit Windows in the U.S., 1996



The gaps between Pay-TV and Network and syndicated broadcast of a movie supports the novelty aspect of Pay-TV.

5.9 Profit Windows for Feature Films (Example: "Forrest Gump")

Simplified table of profit windows and vertical integration in the U.S. media industry. Fictitious example.

Profit Window	Production and Distribution		
	Production	Distribution I	Distribution II
Theatrical	"Forrest Gump" is produced at the Paramount studios in Hollywood	PARAMOUNT Theatrical Distribution distributes the movie to all US theaters	The movie plays in the 349 theaters of Viacom
Video	PARAMOUNT Home Video distributes "Forrest Gump"	"Forrest Gump" is rented in 4,069 Blockbuster videostores (Rentals)	"Forrest Gump" is sold in 4,069 Blockbuster video-stores (Sell-Through)
Pay-TV	PARAMOUNT Television Distribution distributes the movie to Pay-TV	"Forrest Gump" is offered as Pay-Per-View on the cable systems partially owned by Viacom	"Forrest Gump" is shown on the pay TV network "Showtime" which is owned by Viacom
Free-TV	PARAMOUNT Television Distribution sells "Forrest Gump" to one of the networks	United Paramount Network runs "Forrest Gump" on its primetime schedule	"Forrest Gump" is sold to the Off-Network syndication market

There are many more "profit windows" like the reuse of copyrights for merchandising via retail stores or shows in theme parks, which are furthermore enhanced by international windows.

Sources

5.8 MGM MediaGruppe München (1996); ECC research (1997)
5.9 Artopé (1996), p. 73; ECC (1997)

* Joint-Venture with Chris-Craft Industries.

Profit windows and vertical integration of different distributional systems changed the "revenue rules" for a feature film. In 1996 video rental revenues were nearly double the box office revenues.

5.10 U.S. Studio Revenues from Feature Films, 1994-1996

Profit window	1994 $ millions	1994 %	1995 $ millions	1995 %	1996* $ millions	1996* %
Box Office						
Domestic	2,470	53	2,520	51	2,570	48
Foreign	2,180	47	2,450	49	2,725	52
Total	4,650	100	4,970	100	5,295	100
Home Video						
Domestic	5,300	63	5,875	62	6,300	61
Foreign	3,140	37	3,650	38	3,990	39
Total	8,440	100	9,525	100	10,290	100
Pay-per-View						
Domestic	150	94	185	93	225	92
Foreign	10	6	15	7	20	8
Total	160	100	200	100	245	100
Pay-TV						
Domestic	920	67	1,070	67	1,225	67
Foreign	450	33	515	33	610	33
Total	1,370	100	1,585	100	1,835	100
Television						
Domestic	735	44	810	42	900	42
Foreign	925	56	1,100	58	1,265	58
Total	1,660	100	1,910	100	2,165	100
Laserdisks						
Domestic	360	55	300	53	260	51
Foreign	300	45	270	47	250	49
Total	660	100	570	100	510	100
Other						
Domestic	85	76	90	76	95	76
Foreign	27	24	29	24	30	24
Total	112	100	119	100	125	100
TOTAL						
Domestic	10,020	59	10,850	57	11,575	57
Foreign	7,032	41	8,029	43	8,890	43
TOTAL	17,052	100	18,879	100	20,465	100

Sources

5.10 Goldman Sachs Estimates, U.S. Media Research (1996), p.3

* Estimates

6. TV Industry

6.1 Overview

6.1.1 Number of European TV-Channels, 1995

PS = Public Service, PR = Private Service

country		national TV channels* PS	national TV channels* PR	local/ regional windows PS/PR	regional channels PS	regional channels PR	local channels PS/PR	special channels** PS/PR	foreign channels for national target group PS/PR	number of cable channels PS & PR
Austria		2	0	9	0	0	0	0	0	20-30
Belgium	CFL	2	0	0	0	4	11	0	1	30
	CFR	2	0	0	1	3	11	1	0	30
Czech Rep.		2	1	0	0	0	8	0	0	20-36
Denmark		2	3	8	2	1	35	0	5	8-36
Finland		2	2	0	11	0	200	2	2	8-27
France		5	22	53	2	0	42	11	3	15-30
Germany		10	19	4	3	4	52	29	0	3-30
Greece		3	6	0	0	0	60	0	0	–
Hungary		3	0	0	5	0	63	0	0	n/a
Ireland		4	0	0	0	0	0	0	0	6-30
Italy		3	9	25	0		266	14	1	–
Luxembourg		0	1	0	0	0	0	8	0	30
Netherlands		3	10	0	0	2	114	11	5	22-30
Norway		1	5	6	0	0	98	1	7	6-30
Poland		3	3	11	0	11	0	0	3	n/a
Portugal		2	2	0	2	0	0	1	0	n/a
Russia		5	5	4	20		about 80	1	2	n/a
Spain		4	10	15	8	0	400-650	2	8	9-31
Sweden		3	9	27	0	0	50	16	4	6-35
Switzerland		4	1	0	0	1	2	3	0	12-30
UK		3	62	11	1	15	33	9	0	28-60

The number of TV channels differs among the European countries: While markets like France, Germany or England with more than 27 national channels have probably reached their limits, others like Austria, Belgium, Portugal or Ireland could experience significant growth after deregulation.

Sources

6.1.1 European Audiovisual Observatory (1995)

* including regional services distributed by satellite

** "Open Channels", Services for the U.S. Army; Services with foreign target groups and terrestrial rebroadcasts of foreign services

Roughly 50 percent of European TV viewers can be reached via modern distributional systems like DTH satellite or cable.

6.1.2 European TV-Connectivity, 1995

Direct To Home/SMATV and cable connections as percentage of TV homes

Country	DTH / SMATV (%)	Cable (%)	Total (%)
Austria	32.4	34.5	66.9
Belgium	6.2	89.3	95.7
Czech Rep.	16.8	11.0	27.8
Denmark	42.2	22.5	64.7
Finland	6.3	40.4	46.7
France	5.0	8.8	13.8
Germany	29.6	47.8	77.4
Hungary	22.9	36.8	59.7
Ireland	9.2	47.2	56.4
Italy	2.4	0.0	2.4
Luxembourg	5.6	90.2	95.8
Netherlands	4.7	93	97.7
Norway	17.0	34.7	51.7
Poland	16.1	23.3	39.4
Portugal	8.4	0.0	8.4
Spain	6.3	3.5	9.8
Sweden	17.7	44.7	52.4
Switzerland	7.4	83.1	90.5
UK	16.4	5.3	21.7
Total Europe	**25.5**	**22.4**	**47.9**

Of the bigger European TV markets, with more than, 110 million TV households, only one third (33.7 million) receive their TV programmes via cable or DTH satellite / SMATV.

6.1.3 Cable and DTH Penetration in Important European TV-markets, 1994

Country	TV-Households (mil.)	TV-Households (%)	Cable Homes* (mil.)	Cable Homes* (%)	DTH & SMATV (mil.)	DTH & SMATV (%)
Germany	32.8	98	15.5	47.2	8.5	25.9
United Kingdom	22.9	97	1.6	7.0	3.3	14.4
France	22.4	96	1.3	5.8	1.0	4.5
Italy	20.3	99	0.0	0.0	0.7	3.4
Spain	11.8	99	1.5	12.7	0.3	2.5
Total	**110.2**	–	**19.9**	–	**13.8**	–

Sources

6.1.2 SES; Screen Digest April 1996
6.1.3 Cable & Satellite Yearbook (1996); European Television Directory (1996); TBI Yearbook (1996); The Media Map (1996); Kagan World Media (1995); IP Television (1996)
* Connected Homes

6.1.4 Satellite Distribution in Europe, 1996

DTH & SMATV homes

country	million homes
Austria	0.96
Belgium	0.26
Czech Rep.	0.63
Denmark	1.02
Finland	0.13
France	1.03
Germany	10.00
Hungary	0.82
Ireland	0.11
Italy	0.66
Luxembourg	0.02
Netherlands	0.29
Norway	0.39
Poland	1.64
Portugal	0.26
Spain	0.79
Sweden	0.70
Switzerland	0.25
UK	3.79
Total	**23.75**

In 1996, TV programmes distributed via satellite reached 23.75 million homes in Europe.

6.1.5 Forecast: Number of Cable TV Subscribers by 2000

Figures in millions

	1996 subscribers	2000 projected subscribers
France	2.6	4.2
Germany	17.5	20.7
Italy	0.1	2.1
Spain	0.6	1.9
UK	2.1	6.0
EU (+ Switzerland & Norway)	40.4	54.4
Japan	11.0	16.4
USA	61.0	65.0

The number of cable subscribers in Italy is expected to soar twentyfold over the next four years.

Sources

6.1.4 Astra, Screen Digest October 1996
6.1.5 European Commission (1996)

The massive worldwide integration of different distributional channels for media contents becomes quite clear when looking at the range of activities of the big four American media companies. Their activities range from broadcasting networks and stations to theme parks and retail stores.

6.1.6 Comparison of U.S. Media Company Profiles, 1995

Viacom / Paramount / Blockbuster 1995 Financial Highlights and Investments		
Total Revenue	US $ 11,688 bil.	
Operating Income	US $ 1,493 bil.	
Investments	USA	Foreign
TV Production & Distribution	Paramount Television Production Paramount Televison Distribution Spelling Entertainment (78 %)	Spelling Films International, Paramount International Television Distribution
Broadcasting Stations	United Paramount Network (50 %) 12 TV-Stations	VH-1 (Germany), Nickelodeon (Germany, 90%)
Cable & Satellite Networks	Showtime, The Movie Channel, MTV Networks, VH-1, USA Network (50%), Nickelodeon, Nick at Nite, FLIX Channel, Comedy Central (50 %), Lifetime (50 %)	MTV Networks in Asia, Europe, Latin America; Nickelodeon U.K. (50%), Paramount Channel (U.K., 25%), VH-1 U.K.
Filmed Entertainment	Paramount Pictures, Nickelodeon Films, 349 Theatres	United International Pictures (UIP) (33%) all over the world
Video	3,022 Blockbuster Video Distribution & Stores	1,600 Blockbuster Videostores worldwide
New Media	Viacom New Media, Virgin Interactive	
Theme Parks	National Amusement Parks	

Walt Disney Corp. / ABC - CapCities 1995 Financial Highlights and Investments		
Total Revenue	US $ 18,99 bil.	
Operating Income	US $ 3.67 bil.	
Investments	USA	Foreign
TV Production & Distribution	Walt Disney TV Production Walt Disney TV Distribution Buena Vista	TVHamster TV (France, 33%), Tele- Munich (Germany, 50%), Tesauro (Spain, 25%), Lafayette (U.K., 50%)
Broadcasting Stations	American Broadcasting Co. (ABC) 10 TV-Stations	RTL 2 (16.1%), Super RTL (50%), TM 3 (25%) - all in Germany, Eurosport (33%), Eurosport France (10%), GMTV (U.K., 20%), SBS 6 (Netherlands), Scandinavian Broadcasting System (23.5%), Japan Sports Channel (20%)
Cable & Satellite Networks	Disney Channel, ESPN (80%) ESPN 2 (80 %), Lifetime Television (50 %), Arts & Entertainment TV (37.5 %)	The Disney Channel U.K., The Disney Channel Taiwan, The Disney Channel Germany
Filmed Entertainment	Walt Disney Pictures, Touchstone Pictures, Caravan Pictures, Hollywood Pictures, Miramax FilmsDisney Theatrical Productions, Disney Animation Studios	Buena Vista International Distribution offices all over the world
Video	Buena Vista Home Video	Buena Vista International Distribution offices all over the world
New Media	Disney Interactive	
Theme Parks	Disneyworld (FL), Disneyland (Ca.)	Disneyworld in Japan, France
Consumer Products and Retail Stores	Disney Studio Stores Disney Consumer Products	Disney Studio Stores worldwide

Time Warner / Turner Broadcasting 1995 Financial Highlights and Investments		
Total Revenue	US $ 21,133 bil.	
Operating Loss	US $ (64) mil.	
Investments	**USA**	**Foreign**
TV Production & Distribution	Lorimar Telepictures, Warner Bros. TV Production, Warner Bros. TV Distribution, Castle Rock Television	Warner Bros. International Television Distribution, Turner International Television Distribution
Broadcasting Stations	The Warner Bros. Network WTBS Super Station	n-tv (49.79%), VIVA 1 and VIVA 2 (19.8%), Puls-TV (21.62%), Hamburg 1 (24%) - all in Germany
Cable & Satellite Networks	Home Box Office (HBO) / CinemaxNew York One, Court TV (33 %) Comedy Central (50 %), E ! Entertainment TV (49 %), Sega Channel (33 %), Black Entertainment (15 %), Turner Network Television (TNT), Turner Classic Movies (TCM), The Cartoon Network, Cable News Network (CNN), CNN Headline News, CNN Airport Network, CNNfn	HBO Hungary (50%), HBO Czech (60%), HBO Poland (60%), HBO Asia, TV 1000 (Scandinavia, 37.5%), CNN International, TNT International, Warner Bros. TV (WBTV) Latin America, WBTV U.K., WBTV Germany, WBTV Australia
Filmed Entertainment	Warner Bros., Warner Bros. Feature Animation, New Line Cinema, Castle Rock Entertainment,Turner Pictures, Turner Feature	Warner Bros. Distribution offices all around the world
Video	Warner Home Video, Time Life Video, Turner Domestic Home Video	Warner Bros. Home Video offices all around the world
New Media	Warner Bros. Interactive Entertainment, Roadrunner, The Full Service Network, Turner New Media	
Theme Parks	Six Flag Theme Parks (49 %), Warner Bros. Movie World	Warner Bros. Movie World in Australia, U.K., Germany
Consumer Products and Retail Stores	Warner Bros. Studio Stores, Warner Bros. Toys, Turner Retail Group	Warner Bros. Studio stores all over the world

News Corporation 1995 Financial Highlights and Investments		
Total Revenue	US $ 12.175 bil.	
Operating Income	US $1.498 bil.	
Investments	**USA**	**Foreign**
TV Production & Distribution	Twentieth Century Fox Television, Twentieth Television	
Broadcasting Stations	Fox Broadcasting Company 10 Fox Television Stations 12 New World Stations	Vox (Germany, 49.9%) Channel Seven (Australia, 15%)
Cable & Satellite Networks	ASkyB (50%), SkyMCI (50%) fX (50%), fxM (50%), Fox Sports Net (50%), Fox Sports International (50%), Fox News Cable, Fox Children's Network	BSkyB (U.K., 40%), JSky (Japan), Star TV (Asia), Zee TV (Asia, 49.9%), Sky Entertainment Latin America (30%), Canal Fox (Latin America, 50%),Foxtel (Australia, 50%), Channel V (Hongkong, 50%)
Filmed Entertainment	Twentieth Century Fox, Fox 2000 Fox Searchlight, Fox Family Films, Fox Animation Studios	Distribution offices all over the world
Video	Twentieth Century FOX Video	Distribution offices all over the world
New Media	Delphi Internet Services, Fox Interactive, MCI Online	News Multimedia, News Datacom (both U.K.)

Sources

6.1.6 Artopé (1996), p. 32; Annual reports (1996); ECC (1997)

Always the same old movies: With only 27,000 feature films and about 118,000 TV episodes or movies, the stock of successful TV and movie programmes appears to be quite small.

6.1.7 Estimated Size of Film Libraries owned by U.S. Media Companies

Company	Feature Films	Television
Time Warner / TBS	850 Warner Bros. Titles (before 1950) 3,200 Warner Bros. Titles (after 1950) 2,200 MGM Titles (before 1986) 700 RKO Titles 3,000 Hanna Barbera Cartoons (Half-Hour) 3,500 Looney Tunes and Merry Melodies 1,050 Warner Bros. & MGM Cartoons **Σ = 14, 500 Titles**	26,000 TV-episodes (Warner Bros. & MGM) **Σ = 26,000 TV-episodes**
Disney	500 Titles	n/a
Viacom-Paramount	2,400 Titles	40,000 TV-episodes
MCA / Universal	4,700 Titles	20,000 TV-episodes 1,250 Movies of the Week
Sony	2,700 Columbia / TriStar Titles	30,000 TV-episodes
News Corp.	2,200 Twentieth Century Fox Titles	n/a
Total	27,000 Feature Films	116,000 TV-episodes, 1,250 TV-movies

By comparing all revenue sources for TV, the size of Pay-TV revenues becomes quite clear. Out of the 160 million TV households in Europe an estimated number of less than ten million Pay TV subscribers accounted for 14 percent of Western European TV revenues in 1994.

6.2 Revenues & Prices

6.2.1 Estimated Breakdown of Western European TV Revenues, 1994

	($ US bil.)	(%)
Advertising* / Sponsorship	14.8	43
Licence Fee / Governmt. Funding	11.5	33
Pay TV	4.8	14
Other	3.4	10
Total TV Revenue	34.5	100

Sources

6.1.7 Variety; Dempsey (1996), p. 67; Johnson (1996), p.1 and 52; Everschor (1993), p.538; Wasko (1994), p. 62; Koselka and Lane (1995), p. 46
6.2.1 Goldman & Sachs (1995)

* Includes advertising on government owned channels

6.2.2 World TV-Programme Prices, 1994

Country	Programme Price Range (US$ per commercial hour, 50 minutes)	Programme Price Range by type: Light Entertainment (US$ per half hour)	Drama (US$ per hour)	TV movies (US$ per movie)	Children's (US$ per half hour)	Documentaries (US$ per hour)	Feature films (US$ per film)
Austria	3,500 - 8,000	2,300 - 2,600	2,500 - 5,200	11,000 - 12,000	2,300 - 2,600	4,350 - 4,600	10,000 - 15,000
Belgium	3,000 - 5,000	1,000 - 4,000	3,000 - 4,000	5,000 - 7,000	1,000 - 2,500	2,000 - 4,000	5,000 - 20,000
Czech Rep.	600 - 2,000	240 - 350	600 - 1,000	700 - 1,750	240 - 350	480 - 720	1,200 - 2,500
Denmark	2,500 - 5,000	2,000 - 4,500	2,000 - 5,000	3,000 - 5,000	1,200 - 1,400	1,800 - 4,000	4,000 - 6,000
Finland	2,500 - 5,500	1,200 - 1,500	2,200 - 5,500	3,500 - 7,000	1,100 - 1,500	2,200 - 2,700	4,400 - 10,000
France	8,000 - 60,000	7,000 - 15,000	25,000 - 70,000	25,000 - 85,000	5,000 - 20,000	12,000 - 40,000	40,000 - 3 mil.
Germany	15,000 - 80,000	11,000 - 15.000	30,000 - 100,000	50,000 - 150,000	6,500 - 25,000	12,000 - 25,000	50,000 - 3 mil.
Greece	2,000 - 4,000	900 - 1,500	2,000 - 4,000	4,000 - 4,500	900 - 1,500	1,500 - 3,500	6,000 - 50,000
Hungary	800 - 1,000	400 - 500	800 - 1,000	1,200 - 1,500	300 - 400	600 - 900	1,500 - 1,800
Ireland	1,500 - 2,000	600 - 800	800 - 1,500	1,500 - 2,500	600 - 800	1,200 - 1,600	2,000 - 3,000
Italy	10,000 - 55,000	4,000 - 10,000	25,000 - 60,000	20,000 - 75,000	4,000 - 13,000	8,000 - 25,000	30,000 - 3 mil.
Luxembourg	1,300 - 4,000	800 - 1,000	1,300 - 5,000	4,000 - 4,500	800 - 1,000	1,500 - 2,000	5,000 - 6,000
Netherlands	4,000 - 9,000	2,000 - 3,000	5,000 - 7,000	8,000 - 13,000	2,500 - 3,600	3,000 - 5,000	5,000 - 100,000
Norway	1,500 - 5,000	1,600 - 2,500	2,500 - 5,000	2,500 - 5,000	1,000 - 1,900	2,000 - 3,000	4,000 - 8,000
Poland	750 - 1,500	500 - 700	900 - 1,500	900 - 3,000	500 - 800	850 - 1,000	1,500 - 2,200
Portugal	2,500 - 4,000	1,200 - 1,400	2,200 - 4,000	3,000 - 4,000	1,000 - 1,200	1,500 - 2,500	8,000 - 15,000
Russia / CIS	800 - 4,000	175 - 1,000	300 - 3,000	200 - 4,000	175 - 1,500	300 - 2,000	500 - 8,000
Spain	8,000 - 30,000	2,000 - 5,500	7,000 - 25,000	15,000 - 40,000	3,000 - 10,000	5,000 - 15,000	15,000 - 150,000
Sweden	3,000 - 8,000	3,500 - 5,000	3,500 - 9,000	6,500 - 12,000	1,400 - 2,000	3,000 - 4,500	4,000 - 20,000
Switzerland	2,500 - 5,000	1,400 - 4,000	2,500 - 8,000	8,000 - 10,000	1,000 - 2,500	2,000 - 4,000	5,000 - 10,000
UK	20,000 - 100,000 (BBC/ITV)	10,000 - 25,000	20,000 - 120,000	20,000 - 120,000	3,000 - 20,000	15,000 - 35,000	10,000 - 3 mil
	15,000 - 70,000 (Channel 4)	–	–	–	–	–	–
	2,000 - 70,000 (Satellite)	–	–	–	–	–	–
	2,000 - 4,000 (Cable)	–	–	–	–	–	–
Japan	20,000 - 50,000 (NHK)	10,000 - 25,000	10,000 - 50,000	20,000 - 100,000	10,000 - 15,000	10,000 - 40,000	25,000 - 500,000
	25,000 - 120,000 (Commercial)	10,000 - 25,000	10,000 - 60,000	35,000 - 170,000	5,000 - 20,000	10,000 - 70,000	10,000 - 2 mill
				Events (US$ per hour)			Films (US$ per film)
USA	100,000 - 2 mil. (Main netw.)*	350,000 - 815,000	500,000 - 3.25 mil	1 mil - 15.3 mil	50,000 - 205,000	100,000 - 410,000	2 mil - 10.2 mil
	50,000 - 1.25 mil (Pay - cable)	100,000 - 615,000	20,000 - 1.73 mil	1 mil - 5.1 mil	25,000 - 76,500	20,000 - 178,000	1 mil - 8.16 mil
	10,000 - 250,000 (Basic cable)**	1,000 - 306,000	1,000 - 1.53 mil	20,000 - 1.15 mil	1,000 - 76,500	1,000 - 76,500	1,000 - 2.05 mil
	35,000 - 100,000 (PBS)***	1,000 - 25,000	1,500 - 10,200	1,000 - 15,300	1,000 - 15,300	1,000 - 15,300	1,000 - 20,400
	20,000 - 120,000 (Syndication)****	250,000 - 1.12 mil.	500,000 - 2.05 mil	750,000 - 3.05 mil	100,000 - 615,000	200,000 - 510,000	100,000 - 2.25 mil

TV programme prices are highly adjusted to the potential number of viewers and the financial capabilities of each country's TV stations.

Sources

6.2.2 TBI Yearbook (1995); TV-World (1995)

* includes only CBS, NBC, ABC and FOX;
** Over 40 million subscribers including TNT; WTBS, Discovery, ESPN, MTV, The Nashville Network, Family Channel, Lifetime, A&E, Nickelodeon, CNN and others
*** Sales per station; often shows sell to up to 100 stations, prices may vary also by market size
**** combined cash and barter pricing. Prices vary widely both between different markets and within each market, according to time slot and distribution

6.3 Pay-TV

With 13.85 million subscribers or less than ten percent of the 160 million European TV households, the European Pay-TV market should be prepared for further growth.

6.3.1 Pay-TV in European Key Markets, 1996

Country	Channel	Number of Subscribers	Owners
Belgium	Canal plus TVC	180,000	42.67% Canal Plus, Benelux Pay TV 25%
	Filmnet	200,000	100% Nethold - 50% Richemont, 42.7% Multichoice International Holdings
Denmark	Filmnet	90,000	100% Nethold
	TV 1000	35,000	62.5% Kinnevik, 37.5% Time Warner
France	Canal plus	4,100,000	100% Canal Plus
Finland	TPS (to be launched)		25% TF1, 20% France Télevision, 5% France Telekom, 10% CLT, 20% M6, 10% BNP, 10% Lyonnaise des Eaux
Germany	Filmnet	65,000	100% Nethold
	Premiere	1,200,000	37.5% Bertelsmann UFA, 37.5% Canal Plus, 25% Kirch*
	DF 1 (launched July '96)	20,000	51% Kirch, 49% BSkyB**
Italy	Telepiu	850,000	45% Kirch, 45% Nethold, 10% Fininvest
Netherlands	Filmnet	190,000	100% Nethold
Norway	Filmnet	70,000	100% Nethold
	TV 1000	65,000	62.5% Kinnevik, 37.5% Time Warner
Sweden	Filmnet	200,000	100% Nethold
	TV 1000	200,000	62.5% Kinnevik, 37.5% Time Warner
Spain	Canal plus España	1,200,00	25% Canal Plus, 25% Prisa, 15.8% BBV, 13.8% Grupa March, 20.4% others
UK/Ireland	BSkyB	5,200,000	40% News Corp., 17% Panthé, 4% Pearson, 10.8% Granada, 28.8% others

Sources

6.3.1 HSBO, James Capel, Financial Times, September 9 1996, Media Perspektiven 7/96

* BSkyB hopes to obtain a 25% stake – 12.5% each from Bertelsmann and Canal Plus

** BSkyB withdrew it's plans to invest in DF1 in March 1997

6.3.2 Pay-TV Penetration Rates in Europe, 1996

Country	Number of TV households (mio.)	Number of Pay-TV subscribers (mio.)	Pay-TV penetration rate (%)
Belgium	3.792	0.200	5.27
Denmark	2.341	0.125	5.34
Finland	2.230	0.065	2.91
France	21.052	4.100	19.48
Germany	33.396	1.202	3.60
Italy	20.543	0.850	4.14
Netherlands	6.474	0.190	2.93
Norway	1.774	0.135	7.61
Sweden	4.002	0.400	10.00
Spain	12.027	1.200	9.98
UK/Ireland	23.529	5.200	22.10

Britain and France are leaders in the Pay-TV field. With a penetration rate of about 20 percent, they demonstrate the growth potential for other European countries, where figures are much lower.

6.3.3 European Nethold Subscribers, 1992 - 1996

In thousands

	1992	1993	1994	1995	1996
Benelux	202	255	324	381	326
Scandinavia	344	347	324	381	326
Italy	77	239	493	646	788
Central Europe	–	–	–	–	47
Total	**623**	**841**	**1,183**	**1,140**	**1,527**

French Pay-TV Canal+ decided in September 1996 to spend 35 million ECU on the European TV assets of South Africa's Nethold. Nethold's parent companies (Richemont and MIH) will take a 20 percent stake of Canal+. Thus Europe's largest Pay-TV group will be created, combining 7 million subscribers of Canal+ and 1.5 million subscribers of Nethold.

Sources

6.3.2 Financial Times, September 9 1996; Kagan European TV Country Profiles (1996); ECC (1997)
6.3.3 Nethold; Canal Plus; SBC Warburg; Screen Digest October 1996

Pay-TV revenues are skyrocketing in most European countries with growth rates between 10 and 70 percent.

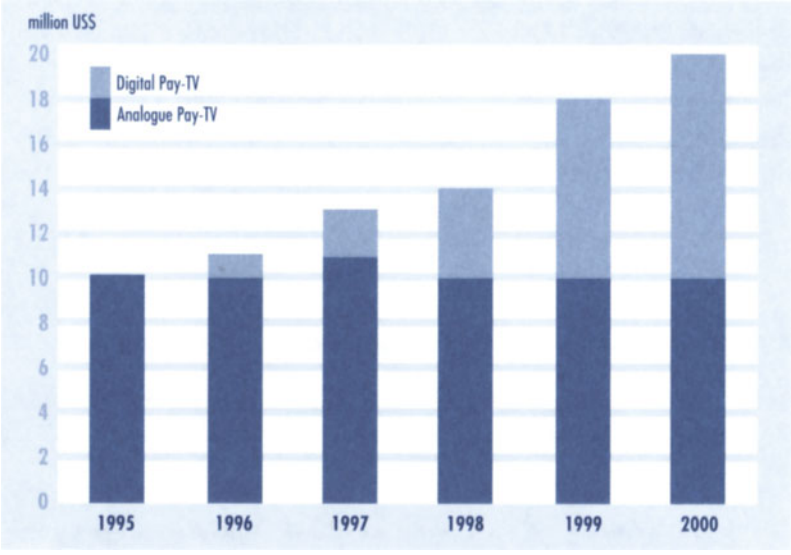
6.3.4 Revenues of Pay-TV Channels and Monthly Fees

	Revenues in million ECU						Avg. monthly fee	
	1990	1991	1992	1993	1994	94/93 Change	1993 (in ECU)	1994 (in ECU)
Austria	0.3	0.5	3.2	6.7	9.7	46 %	20.5	22.0
Belgium								
Canal+ Belgique	7.3	14.4	28.6	39.2	49.0	25 %	24.6	25.1
FilmNet Vlaanderen	17.2	19.4	28.3	39.5	55.8	41 %	24.6	26.5
Switzerland								
Teleclub	17.5	16.9	18.9	20.3	22.8	12 %	19.1	20.2
Telecine Romändie	3.1	2.4	2.5	–	–	–		
Czech Rep.	–	–	–	–	0.0	–	–	4.1
Germany	9.3	43.8	105.3	162.6	220.8	36 %	21.1	23.2
Denmark	4.9	7.3	12.2	17.7	27.6	55 %	24.0	33.0
Spain	3.2	50.6	134.2	182.0	239.7	32 %	0.0	22.3
Finland	6.1	7.5	8.3	7.6	14.8	96 %	18.5	32.6
France	870.7	906.1	1,046.9	1,103.5	1,217.3	10 %	25.5	25.7
UK								
The Movie Channel	6.8	38.5	64.1	60.5	74.9	24 %	15.4	19.2
Sky Movies	134.7	117.8	112.3	107.5	120.4	12 %	15.4	19.2
Sky Movies & TMC	–	15.6	265.0	386.4	573.0	48 %	21.8	25.6
Greece	0.4	1.1	1.3	1.2	1.2	0 %	–	17.4
Hungary	–	0.0	2.3	6.0	10.2	70 %	4.9	6.1
Italy	–	8.6	68.1	115.6	171.4	48 %	19.6	18.8
Netherlands	17.0	22.6	28.3	38.4	55.9	46 %	25.3	27.9
Norway	3.6	5.3	7.0	7.6	11.0	44 %	19.8	28.7
Sweden								
FilmNet Scandinavia	33.9	40.4	57.4	45.2	66.8	48 %	19.6	27.0
TV 1000	10.3	27.6	60.9	57.0	61.8	8 %	18.6	18.4
FilmMax	–	–	0.0	0.9	1.5	63 %	9.8	9.7
TV 1000 & FilmMax	–	–	0.5	7.7	12.6	63 %	20.7	20.6
SF Succé	7.3	–	–	–	–	–	–	–

Sources:

6.3.4 European Audiovisual Observatory (1995); OBS; Screen Digest (1996)

6.3.5 Western European Pay-TV Revenue Growth, 1995-2000



Pay-TV revenue growth in Western Europe is estimated to come solely from digitally distributed Pay-TV by substituting analogue Pay-TV systems.

6.3.6 Pay-TV: Value Chain with a Single Programme

	Value Chain Step	Description	Example
1	Network infrastructure	Providing transfer services and channels (e.g. fiberoptic cable, satellites)	Cable system providers like Deutsche Telekom or satellite providers like ASTRA and Eutelsat
2	Network architecture	Providing network services like telephony or ISDN	Cable slots on cable systems or transponder capacities on satellites
3	Content (Programme production and distribution)	Production of feature films and TV-series for Free- and Pay-TV, worldwide distribution	Production of "Forrest Gump" by Paramount Pictures, distributed to a Pay-TV channel
4	Value-added Services	Broadcasting of feature films in a fixed programming schedule, broadcaster acts as a scheduler	Canal Plus broadcasts its feature films in a fixed daily schedule
	Service Providing	Distribution and maintenance of decoders, invoicing and customer service	Canal Plus distributes and maintains its decoders in cooperation with retailers and manages subscribers
5	Consumer devices	Production of consumer devices specifically for Pay-TV	Production of SECA decoders for Canal Plus

With a single programme, the Pay-TV value chain consists of six different levels. The (mostly analogue) single programme services don't offer much variety for viewers or opportunities for growth, as the channel capacity is limited.

Sources

6.3.5 Interspace Consulting; ATM (1996)
6.3.6 Booz Allen & Hamilton (1995), p.39

Sporting events are one of the main reasons to subscribe to a pay-per-view programme. But most of Mike Tyson's fights didn't last very long. Due to the high costs of sometimes more than 50 Cents per second, the number of Pay-TV viewers dropped sharply. The channels replied to this problem by a new pricing model offering more fairness. Tyson's last fight was long enough to appear reasonably priced for Pay-TV at only 0.2 Cents per second.

With multi-channel packaging, the Pay-TV value chain consists of seven different levels. The mostly digital services offer a variety of programmes and packages ("bouquets") as well as plenty of financial opportunities for the provider by either running their own broadcasts or reselling channels to other programme-suppliers.

6.3.7 Pay per View in the U.S.: Did Mike Tyson Fight too Fast?

	Number of Pay-TV viewers	Length of fight (mins)	Cost on U.S. Pay-TV-Channel	Costs per second	Revenue from U.S. Pay-TV viewers#
Tyson vs. Peter Mc Neely	1.7 Million	1:29	$39.95 - $49.95	$0.44 - $0.56	68 m -85m
Tyson vs. Buster Mathis	1.4 Million	8:32	Broadcast free on FOX		
Tyson vs. Frank Bruno	n/a	6:50	$39.95 - $49.95*	$0.09 - $0.12	n/a
Tyson vs. Bruce Seldon	1 Million	1:49	appx. $40	$0.37	appx. 40 m
Tyson vs. Evander Holyfield	n/a	33:37	up to $49.75**	$0.02	n/a

6.3.8 Pay-TV: Value Chain with Multi-Channel Packaging

	Value Chain Step	Description	Example
1	Network infrastructure	Providing transfer services and channels (e.g. fiberoptic cable, satellites)	Cable system providers like Deutsche Telekom or satellite providers like ASTRA and Eutelsat
2	Network architecture	Providing network services like telephony or ISDN	Cable slots on cable systems or transponder capacities on satellites
3	Content (Programme production and distribution)	Production of feature films and TV-series for Free- and Pay-TV, worldwide distribution	Production of "Forrest Gump" by Paramount Pictures, distributed to a Pay-TV channel
4	Value-added Services	Programme scheduling of a broadcaster now offers various niche channels which are packaged as multi-channel options	BSkyB offers a distribution platform for different niche channels thus changing the traditional broadcaster's programming task
	Value-added Services	Former programme suppliers act as broadcasters	BSkyB acts as a broadcaster with its own channels like Sky Gold. Additionally, programme suppliers like Paramount turned broadcaster with their "PARAMOUNT Channel"
	Service Providing	Distribution and maintenance of decoders, invoicing and customer service	Canal Plus distributes and maintains its decoders in cooperation with retailers and manages subscribers
5	Consumer devices	Production of consumer devices specifically for Pay-TV	Production of SECA decoders for Canal Plus

Sources

6.3.7 Kabel & Satellit 11 November 1996; ECC research (1997)
6.3.8 Booz Allen & Hamilton (1995), p. 39

\# estimates
* Depending on the way the fight was ordered. (Via Telephone or DSS Remote Control)
** Cablevision (with 2.8 million households connected) offered the following pricing model: The first round cost $ 9.95, each additional round cost another $9.95 till the final price of $49.75 was reached. Any further round was not charged.

6.3.9 Rollouts of Digital Bouquets in Europe, 1996

Market	Operator	Service	Launch	Satellite (Cable)	Cond. access supplier	Decoder suppliers	Channels	Decoder cost
Belgium	Nethold	MultiChoice DStv	Jul 96	Astra 1E/1F	Irdeto/Beta	Pace, Pano-sonic, Echo-star/Sagem, Nokia	41	$900
	Electrabel	MultiChoice	Jul 96	cable	Irdeto/Beta-technik	d-box	41	?
	Canal Plus Belgique (Canal Plus/RTBF)	CanalSatellite Numérique	1996	Astra 1E/1F	SECA	Philips, Thomson, Pioneer, Sagem, Sony	30	Ffr 4,000 - Ffr 5,000
Denmark	TeleDanmark	digital cable	1997?	cable	to be decided	to be decided	?	to be decided
Finland	Yleisradio	digital terestrial	1997?	terrestrial	N/A	to be decided	?	to be decided
France	Canal Plus	CanalSatellite Numérique	Apr 96	Astra 1E	SECA	Philips, Thomson, Pioneer, Sagem, Sony	30	Ffr 4,000 - Ffr 5,000
	Canal Plus	Canal Plus Numérique	Apr 96	Astra 1E	SECA	Philips, Thomson, Pioneer, Sagem, Sony	30	Ffr 4,000 - Ffr 5,000
	TF1/CLT/M6/ France TV/ Lyonnaise	TPS (Télévision Par Satellite)	Dec 96	Eutelsat Hot Bird 2/3	France Telecom	France Telecom	40	to be decided
	AB Productions	AB Sat	Apr 96	Eutelsat II-F1	France Telecom	France Telecom	28	Ffr 2,200
Germany	Kirch/BSkyB	DF1	Jul 96	Astra 1E/1F	Irdeto/Betatechnik	Nokia	32	DM 1,100+ or DM 30/m
	Newco (Bertelsmann/ Canal Plus/ Havas)	ClubRTL	Oct 96 (project cancelled)	Astra 1E/1F	SECA	Thomson, Sagem, Philips	?	to be decided
	Pro7 (Thomas Kirch/ Rewe)	SiebenPlus	Nov 96 (project cancelled)	Astra 1F	Irdeto/Beta-technik	Nokia	16	DM 1,100+
	Bertelsmann/ Canal Plus / Kirch	Premiere Digital	1997	Astra	SECA	Thomson, Sagem, Philips	?	to be decided
Italy	Telepiù (Mediaset/ Nethold/ Kirch)	DStv	Jan 96	Eutelsat IIF1/ Hot Bird	Irdeto/Beta-technik	Pace, Nokia, Grundig	8	Ll 600,000
	STET/ Telecom Italia	Stream	1996	cable	Irdeto/Beta-technik	to be decided	?	to be decided
Netherlands	Nethold	MultiChoice DStv	Jul 96	Astra 1E/1F	Irdeto/Beta-technik	Pace, Panasonic, Echo-star/Sagem, Nokia	46	Nfl 1,600
Scandinavia	Nethold	MultiChoice DStv	Jul 96	Astra 1E/1F	Irdeto/Beta-technik	Pace, Panasonic, Echo-star/Sagem, Nokia	45	Skr 6,000+
Sweden	Sveriges Television	digital terrestrial	1998	terrestrial	N/A	to be decided	8	to be decided
	Svenska Kabel	N/A	1996	cable	to be decided	to be decided	?	to be decided
	Tele Media	N/A	1996	Eutelsat Hot Bird 2	to be decided	to be decided	20	to be decided
Spain	Canal Plus Espana	CanalSatellite Espana	1996	Astra 1E/1F	SECA	Philips, Thomson, Pioneer, Sagem, Sony	25	Ffr 4,000 - Ffr 5,000
	Televisa	Galavision digital	1996	PanAmSat	to be decided	to be decided	80	to be decided
	Antena 3	Antenna 3 Digital	1996	N/A	to be decided	to be decided	20	to be decided
UK	British Sky Broadcasting	BSkyB	Oct 97	Astra 2A	News Datacom	to be decided	150?	to be decided
	BBC	BBC Worldwide	1997	Astra	to be decided	to be decided	?	to be decided
	BBC	BBC Digital TV	Jan 98	terrestrial	to be decided	to be decided	?	to be decided

The on-going rush for digital television and multi-channel packaging stretched the imagination of many broadcasters. In 1996, at least 26 plans for digital TV bouquets were announced in Europe alone. Most of the services are conceived as Pay-TV channels.

Sources

6.3.9 Screen Digest, August 1996, p. 177-184; ECC (1997)

Narrow targeting from "American Movies" and "Automobile" to "Parliament Channel" and "Women's Interest": European digital TV channels try to cover all formats that could potentially interest viewers.

6.3.10 Digital TV: Composition of Bouquets in Europe, 1996

Projected channels in *italics*

	Canal Satellite	AB Sat	TPS	DF 1	Nethold (Scandinavia)	BSkyB (analogue)
General programme	TMC Paris Première		*TF1, France 2, France 3, M6, TSR*	NBC		
Children	Canal J Disney Channel			Junior, Club House		TCC, Nickelodeon
TV series/movies	Canal Jimmy	AB Channel 1		Star Kino, Comedy, Western Movies, Romantic, Cine Action, Krimi & Co, Herz & Co	*Hallmark Entertainment*	Sky soap, The Family Channel, UK Gold; The Sci-Fi Channel
Sports	Eurosport France *Chaine hippique*			DSF+; DSF Golf	*Super/Sport*	Sky Sports,Sky Sports 2, Sky Sports Gold
Information	LCI		*Euronews*	DF 1 Infokanal, Sky News, BBC Prime		Sky News EBN
Stock Market Information				CNBC	*CNBC, Bloomberg Informatn., EBN*	
Weather	La Chaine Météo				*The Weather Channel*	
Rock Music	MCM	Musique 1		MTV		MTV
Classical/Jazz	Muzzik	Musique classique		Classica	*BET on Jazz*	
Country				CMT		CMT
Leisure/Travels	Voyage	Evasion			*Travel*	Sky Travel
Computer/Video Games	C: direct				*MSNBC, Giga TV*	
Classic Movies	Ciné Cinéfil			Heimatkanal, Filmpalast		Bravo
Modern Movies	Ciné-Cinémas	Rires, Polar Romance Action/Aventure		Western Movies, Cine Action, Romantic		The Movie Channel
New Movies	Canal +				*FilmNet*	Sky Movies
American Movies		*Hollywood Boulevard*				Paramount
Erotic		XXL				
Pay-Per-View	Kiosque			CINEDOM		
Animals		Animaux				
Cartoons		Cartoons		K-toon		
Documentation	*Planète Histoire*	*Encyclopedia*	*Geschichtskanal*	Discovery Channel	*Discovery Channel*	Discovery Chnl.History Channel
Culture	ARTE (?)		*ARTE (?)*		*Performance – the Arts Channel*	
Automobiles		Automobile				
Nature	*planned*	*hunting, fishing and nature are considered as possible contents*				
Nostalgia		*Nostalgia*				VH - 1
Tele-Shopping	*planned*					QVC
Parliament Chnl.	*planned*					
Educational Chnl.	*La Cinquième*		*La Cinquième*			TLC
Women's Interest						UK Living
Radio Channels		30		30 DMX		

Sources

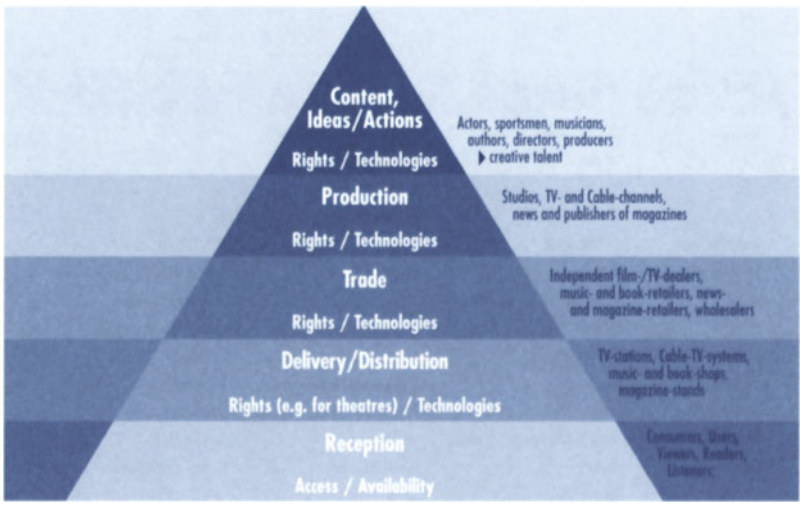
6.3.10 Sequentia (3/1996); ECC (1997)

7. Interactive Television

7.1 General

7.1.1 Overview

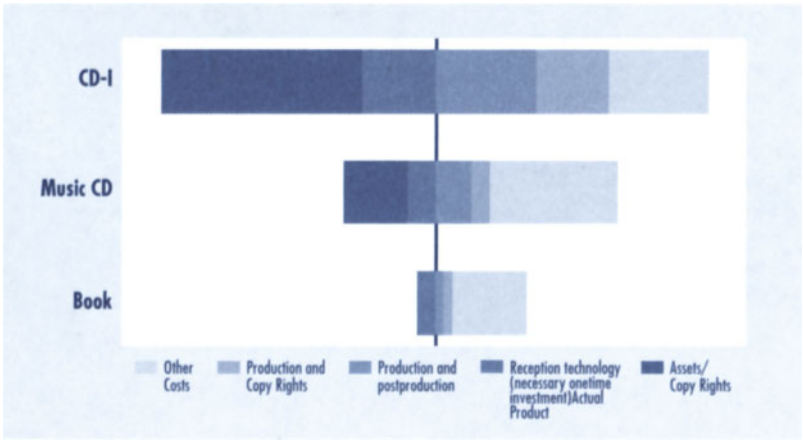
7.1.1.1 Pyramid of Entertainment-Productions



Content is king: all fields of the entertainment pyramid depend on the production or distribution of content by using the rights on original ideas and/or the performance of creative people. The availability of technology also plays a vital role.

7.1.1.2 Comparison of Relative Production and Reception Costs between Traditional and New Media

Start up costs for consumers as a mix of fixed costs and variable costs



Rising production costs: a multimedia production differs from traditional media especially in terms of high production costs, post-production (-costs) and material value. Signal Economy: although the costs for the distribution of data are falling due to high-tech media, consumers have to spend more for expensive reception equipment.

Sources

7.1.1.1 Swientek, Friedrich-Ebert-Stiftung (1994); ECC (1997)
7.1.1.2 Swientek, Friedrich-Ebert-Stiftung (1994); ECC (1997)

7.1.2 Trials

7.1.2.1 Classification of Enhanced Interactive Services

Most enhanced interactive services are still in an early stage of development. Consumers will finally decide in which of the many different potential areas interactive services will succeed.

Description	Main applications	Market segments targeted	Networks / Technologies	Main suppliers	Life cycle phase
Entertainment services	• VoD • Videogames • Interactive quizzes	Households	FTTC-FTTB(uilding) FTTH-ADSL	Telephone and Cable companies Media	Testing
Information and Communications services	• On-line (multimedia) publishing • On-line (multimedia) data-bases • E-mail • Electronic Forums • Videotelephony • Videoconference	Households Small Office /Home Office Market Business	ISDN FTTC-FTTB(uilding) FTTH-ADSL Internet (and "Internet like" networks) Videotex	Telephone and Cable companies Media Internet-operaters	Testing ADSL, FTTH, etc. Introduction (ISDN, "Internet like" networks) Development (Internet) Maturity (Videotex)
Transactional services	• Home Shopping • Home Banking • Online Reservation Services • Online Trade • Financial Services (TFS)	Households Small Office /Home Office Market Business	FTTC-FTTB(uilding) FTTH-ADSL Internet (and "Internet like" networks) Videotex Dedicated networks	Telephone and Cable companies Industries (banks, finance, retail, etc.) Internet-operaters Specialised operators	Introduction (Internet, "Internet like" networks, ISDN) Maturity (Videotex) Development (Specialised networks)
Professional services	• Teleworking • Telemarketing • Financial services • Teletraining	Small Office / Home Office Market Business	ISDN FTTC-FTTB(uilding) FTTH-ADSL Internet (and "Internet like" networks) Videotex	Telephone and Cable companies Media Industries Internet-operaters Specialized operators	Introduction (Internet, "Internet like" networks, ISDN) Maturity (Videotex) Development (Specialised networks)
Public services	• Online Central and Local Administrations services • Tele-education • Fiscal services • On-line Healthcare services • Electronic Museums and Galleries • Electronic Libraries	Households Small Office / Home Office Market Business Public Administrations	ISDN FTTC-FTTB(uilding) FTTH-ADSL Internet (and "Internet like" networks) Videotex	Telephone and Cable companies Media Public Administrations Internet-operaters	Introduction (Internet, ISDN) Maturity (Videotex)
Monitoring	• Tele-alarm • Tele-security • Online automated activation and regulation	Households Small Office / Home Office Market Business	PTSN ISDN FTTC-FTTB(uilding) FTTH-ADSL Dedicated networks	Telephone and Cable companies Specialised operators	Maturity (PSTN) Development (Specialised networks)

Sources

7.1.2.1 EITO (1996)

7.1.2.2 Development of Interactive TV-Projects in the U.S.

First Generation (early experiments)	Second Generation Analogue to Digital	Third Generation Fully Digital	Fourth Generation: Internet/MMDS
* "Winky Dink and You" (1953 - 1957) * AT&T-demonstration of a picture telephone * Qube experiments in the 1970s * Aspen Movie map	* ACTV/Westlake * Ameritech/Sterlin H. * Bell Atlantic * Interactive Network * Interactive Systems * EON (TV Answer) * GTE/Cerritos * Time Warner/Quantum Channel * SDNET/Hartford Ct. * Viacom/Castro Valley * Viewer Controlled TV * Your Choice TV	* Ameritech/diverse * Bell Atlantic/Future Vision; Stargazer * Bell South/Atlanta * DiscoveryGTE/Main Street * Interaxx/Coral Springs * Pacific Bell * South West Bell/Richardson * Sprint/Wake Forrest * TCI/Hartford Ct. * TCI/Microsoft/Redmond * Time Warner/FSN * US West/Omaha	**High speed Internet Access:** * Ameritech/IBM * AT&T Worldnet * Bell Atlantic * Bell South * Continental * Pacific Bell * TCI (@home) * Time Warner (Road Runner) * US West **Microwave Multipoint Distribution System (MMDS):** * Bell Atlantic * Bell South * Nynex * Pacific Bell
1955 -1994	1990 - 1995	1995 - current	1996 - ...

New technologies available changed the concepts of interactive services. From analogue to digital, from proprietary to open network standards. MMDS as the latest distribution technology raises two questions: What comes next? And: Which technology will finally provide the quality required for true interactivity?

Sources

7.1.2.2 ECC research (1997)

The number of trials is a measuring tool for the great uncertainty of the industry. Do consumers need or want interactive television services, and if so: what should they contain and how should these services be distributed? As demonstrated by the number of trials that were quietly abandoned, sufficient answers were seldom to be found.

7.1.2.3 United States and Canada: Second Generation Interactive TV-Trials

Analogue to Digital: 1990-1995

Company	Location	Set-top	Services	Technology	Start/End	# Homes	Cost/Month
ACTV	Westlake, CA	Zenith	Interactive sports/news	Analogue coax	5/95-4/96	1,000	$6/month
Ameritech	Sterling Heights, MI	n/a	VOD (access to educational videos)	Fibre to the curb ADSL	Spring 1993-94	115	$5-7/month
Bell Atlantic	Arlington County, VI, Union City, NJ	n/a	VOD	ADSL	1993-n/a	400; several school buildings	free
Bell Atlantic	Madison, Florham Park, Chatham Borough, NJ	n/a	PPV, Pay Per Day	ADSL	1994-n/a	12,000	n/a
Ean Corporation (formerly TV Answer)	first test of TV Answer in 1989, Fairfax, Virginia	EON: "Personal TV Unit" with integrated display	Food ordering, Home banking, VCR programming	IVDS (Interactive Video and Data Service) via Sat.	1994-1995	n/a	$500 per home unit
Cox / ICTV	Omaha	Zenith	VOD	Fibre/Coax; ADSL	1994-n/a	4,000	n/a
GTE	Cerritos, CA	n/a	NVOD, VOD (manually inserted tapes into VCRs)	Fibre, Coax and twisted pair, Switched Video Overlay	1990-94	4,000	$10/month
GTE	Manassas, VA	n/a	VOD, Games, PPV, Distant learning	Video Dialtone	1994-n/a	1,000	n/a
Interactive Network	California and Illinois	Control Unit by Interactive Network	Game Shows, Sports contests	FM radio to send data in conjunction with broadcast TV signal	1992-n/a	1994: 5,000	$15/month $199 per console, $0,50 - $2 per game
Interactive Systems (VEIL)	Portland, OR	Interactive Systems	ability to print coupons and recipes	special modulator ads information to TV-luminance signal	1993-n/a commercial launch in Spain failed	n/a; Spain: 13,000	$10/month or $300 once for the control unit
New York Telephone	Manhattan, NY	n/a	PPV	Video Dialtone	1993-n/a	50	$12/month
Rochester Telephone/USA Video	Rochester, NY	Samsung	PPV, VOD, Home Shopping	Fibre to the curb, ADSL	1994-n/a	1,000	$8/month, $4 for VOD
SNET (Southern New England Telephone)	Hartford, CN	Sci/Atlanta	NVOD, PPV	Hybrid Fibre/Coax	4/94-95	350	$20/month + PPV
Source Media (Interactive Channel)	Denton, TX	IT Network	Transaction, Information	Coax	11/93-Rollout	1995: 200	$2/month
Time Warner (Quantum)	Queens, NY	Pioneer	NVOD	Fibre to the feeder	Spring 1992 -n/a	10,000	$25/month, $2-$5 for PPV
Viacom Cable	Castro Valley, CA	AT&T	NVOD, PPV, Games, Home Shopping	Fibre/Coax	1994-95	4,000	n/a
Le Group Vidéotron Videoway (Canada+ UBI (since 1995)	Quebec City, Montreal	Vidéotron, IBM	PPV, Home Shopping, E-Mail, Games, Interact. Sports	Coax	1990 UBI since 1995	1994: 230,000 UBI 1995: 34,000	1994: 8 CAD or 19 CAD
TCI, AT&T, US West (Viewer Controlled TV/VCTV) -	Littleton (Denver), CO	AT&T, Jerrold Communic.	NVOD, VOD	Fibre/Coax	7/92-6/94	300	$1-$4 for VOD
Western Communications/TCI	Ventura County, CA	General Instruments	information, interactive sports, games	n/a Analogue coax? technology developed by ACTV)	1995-n/a	apprx. 1,000	n/a
Your Choice TV (Discovery Com.)	West Palm Beach, FL	n/a	PPV	Coax	10/93-4/94	20,000	69 cents/ TV-Show

Sources:

7.1.2.3 Cable World, Press Releases; ECC research (1997)

7.1.2.4 United States: Third Generation Interactive TV-Trials

Fully Digital: 1995-current

Company	Location	Set-top	Services	Technology	Start/End	# Homes	Cost/Month
Ameritech	MI, IL, WI	Sci/Atlanta	Basic Cable + digital	Coax	Current	n/a	n/a
Bell Atlantic (FutureVision)	Dover Toms River, NJ	Philips, FutureVision TeleTV	NVOD, PPV, Transaction	Switch DigVid	2/96-Rollout	2/96: 750 add. 1,000 - 1,500 / month	Varies
Bell Atlantic (Stargazer)	Fairfax, Vir.	Philips/CLI, IBM Stellar One	VOD, Home Shopping	ADSL	3/95-12/95	1,000	$7.5/month
Bell South	Atlanta, GA	Sci/Atlanta	NVOD, PPV, Transaction	Hybrid, Fibre/Coax	2/96-mid/97	12,000	n/a
Discovery (Choice TV)	n/a	Any Settop	TV on Demand	Hybrid, Fibre/Coax	Q1/96-Rollout	n/a	n/a
FibreSouth	Raleigh, N.C.	n/a	PPV, high speed date	Hybrid, Fibre/Coax	6/97-n/a	4,000	n/a
GTE (Main Street)'	Carlsbad, CA Newtonville, MA	n/a	VOD, Distant learning	Hybrid, Fibre/Coax	1995-n/a	4,000 (mid 1995)	$9.95/month
GTE	Clearwater, FL Ventura County, CA	General Instr. later Zenith	PPV, NVOD	Hybrid, Fibre/Coax, full digital in Q1/97	1995-Rollout	9/96: 50,000 (Clearwater) 3,000 (Ventura)	n/a
Interaxx (HomeStation)	Coral Sp, FL	Motorola	Multimedia Transaction	2-way phone Hybrid, Fibre/Coax	Q1/97	2,000	n/a
Pacific Bell	San Diego, L.A., Orange County, San Jose, CA	Sci/Atlanta	NVOD, VOD, Games, Home-Shopping	Hybrid, Fibre/Coax	Q1/96-1997	1995: 200 (1 Mio. est.)	n/a
SouthWest Bell	Richardson, TX	n/a	VOD, Games	Fibre to Curb	1/96-Spring 97	n/a (1,800 est.)	$23/month
Sprint (VDT Trials)	Wake Forest, NC	n/a	VOD, Games, Information	n/a	10/95-Fall 97	1,000	n/a
TCI	Hartford, CN	General Instruments	PPV, Information	Coax/HITS (24 channels in 6 - Mhz slot)	Oct. 96-Rollout	n/a	$4/PPV
TCI/Microsoft (MS Trial)	Redmond, WA	GI, HP, NEC	VOD, Games, Information	n/a	12/94-n/a	1995: 200 (2,000 est.)	n/a
Time Warner (Full Service)	Orlando, FL	Sci/Atlanta	VOD, Games Information, Shopping	Fibre to curb	10/95-Rollout ("Pegasus"-project)	4,000	per service $1-5
US West (Tele Choice)	Omaha, Neb	Sci/Atlanta, 3DO	PPV, Games	Hybrid, Fibre/Coax	9/94-3/96	1995: 1,300	$6-$20/month
Ventura County Cablevision	Southern California	General Instruments	Interactive sports/news, games	Coax (ACTV technology)	Q2/96-n/a	1,000	$9.95/month

With new, fully digital technologies, new interactive trials were started. The hope of finding better interactive solutions provided by digital technologies raised new expectations. But so far, results have been handled quietly. - New technologies, old failures?

Sources

7.1.2.4 Cable World, Press Releases; ECC research (1997)

High speed Internet access, Pay per view and near video on demand are the most common technologies, tested in several actual trials making use of Internet or MMDS distributional networks.

7.1.2.5 United States: Fourth Generation Interactive TV-Trials Starting 1996

Internet or Microwave Multipoint Distribution System (MMDS)

Company	Location	End-device	Services	Technology	Start/End	# Homes	Cost/Month
Ameritech/IBM	Chicago	Westell	high speed Internet access and data service	ADSL modem	10/96-n/a	200	n/a
AT&T/WorldNet	Sacramento, CA	n/a	high speed Internet access, Web shopping	cable modem	7/96-n/a	250	n/a
Bell Atlantic	Northern Virginia	n/a	n/a	ADSL	Q3/96-n/a	n/a	n/a
Bell Atlantic	Hampton Roads, VA	Thomson ?	PPV, NVOD	MMDS	Q2/97-Rollout	n/a (400,000 est.)	n/a
Bell South	Chamblee, Atlanta suburb,	Scientific Atlanta	PPV, NVOD	MMDS	6/96-Rollout	8,000	n/a
Bell South	Atlanta, New Orleans	Westell	high speed Internet access and data service	cable modem ADSL modem	9/96-Rollout	n/a ADSL-mod. = tech test in employee homes	$40/month for modem rental, unlim. Internet access
Buford Television	East Dallas	General Instrument ?	PPV, NVOD	HITS (24 ch. in a single 6-Mhz slot)	10/96-Rollout (2/97)	1,000	$300 per set top est.
CAI Wireless Systems	Rochester, N.Y.	General Instr. (SURFboard)	high speed I. access	MMDS	10/96-12/96	n/a	$30-$40 /month
Continental Cablevision	two Boston suburbs, Jacksonville, Fla; Long Island, N.Y.	LANcity Corp. (Boston, Long Island), General Instr. (Jacksonville)	high speed Internet access and data service	cable modem	2/96-Rollout (9/96); 10/96 in Long Island	200	$35-$50/m for modem rental, unlim. Internet access,$100/install.
Cox	Orange County, CA	LANcity or Motorola	high speed I.-access	cable modem	11/96-Rollout	300	n/a
General Telephone	Dallas, TX	Aware, AT&T/Westell	1,5-4 Mbp/s Internet access	ADSL	Early 96-1997	30	Free Tech Test
Nynex	Boston	Thomson ?	PPV, NVOD	MMDS	Q1/97-Rollout	n/a	n/a
Pacific Bell	Los Angeles	Thomson ?	PPV, NVOD	MMDS	Q4/96-n/a	500 "friendly user"	beta tech test
Pacific Bell	San Jose, San Diego, CA	Zenith	high speed Internet access and data service	xDSL (high speed digital subscriber line), SDSL, HDSL	8/96-Rollout	100, commercial service in mid-1997	n/a
TCI (@home)	Sunnyvale, CA; preparing to launch in up to 7 markets later in 1996	LANcity Corp.	high speed Internet access and data service, video	cable modem	2/96-Rollout	potential reach of approx. 40% of U.S. households	$30 to $40/m depending on cable system, $100 to $150 for installation
Tele-Communications	Hartford, C	n/a	PPV, NVOD	HITS (24 ch. in a single 6-Mhz slot)	10/96-Rollout	n/a	n/a
Televideo (Free BeeTV)	New York, (Miami, Chicago in 1998)	n/a	VOD	ADSL	2/97-n/a	150	free for watching advertising
Time Warner (Road Runnerformer "Linerunner")	Elmira, NY, Corning, NY Akron, Ohio, tech trial in Canton, Ohio	Motorola	high speed Internet access and data service	cable modem	Elmira: 6/95-4/96 Corning: 8/96-Rollout Akron, Canton: 9/96-Rollout	28.000 (Elmira), 12,000 (Corning) 300,000 (Akron-C./pot. market)	$40/month for modem rental, unlim. Internet access, personal WWW-page, $75-$300 for installation
US West	Boulder, Denver, Minneapolis, CO	Westell	1,5 Mbp/s Internet access	ADSL, HDSL	Q1/96-Rollout	1,000	$60-$100/month
US West	Omaha, Neb (10 markets by end of 1996, 40 in 1997)	LANcity Corp.	high speed Internet access and data service	ADSL/ATM	9/96-Rollout	300 by end of 1996	$50/month for modem rental, unlim. Internet access $125 instal.
ViewCall America	Atlanta, GA	ViewCall, America	I-Net access, games	phone uplink	7/96-Rollout	n/a	$300/set top

Sources:

7.1.2.5 Cable World, Press Releases; ECC research (1996)

7.1.2.6 Interactive TV-Trials, 1994 - 1996 Worldwide

Outside the U.S.; without commercial rollouts

Company	Location	Settop	Services	Technology	Start	# Homes
Telecom Australia	Australia	CLI, (OS-9/DAVID)	VOD	ADSL	1996	2,500
Belgacom (Tectris)	Belgium (St. Lambrechts Woluwe, Brussel suburb)	Apple	VOD	ADSL, PON (Passive Optical Network)	2/96-4/96	50
Deutsche Telekom	Germany (Berlin, Hamburg, Cologne/ Bonn, Leibzig, Stuttgart, Nuremberg/ Munich)	Alcatel, Nokia, IBM, HP	VOD, NVOD, News-on-demand, Telelearning, Homeshopping, Homebanking, Games	ADSL/ATM/HFC	1996	7,000
Vebacom	Germany (several cities in NRW)	Nokia ?	VOD, High Speed Internet access, Homeshopping, Telelearning, Games	Fibre/Coax, ATM	1996	10,000
RWE Telliance	Germany (Gelsenkirchen)	n/a	VOD, High Speed Internet access, Homeshopping, Tele-learning/ - banking	Fibre/Coax, ATM, DECT	1996	1,000
Helsinki Telephone Company	Finland (Helsinki)	Philips	VOD	ADSL	mid 1995	30
Telecom Finland	Finland	n/a	VOD, Internet access	end-to-end ATM, ISDN	11/95-1998	several thousand
France Télécom	France	Phillips, Sagem, Thomson	PPV, NVOD, multimedia services	ADSL/Fibre to home	1996	2,000
Hong Kong Telecom	Hong Kong	NEC (OS-9/DAVID)	VOD, Homeshopping	Fibre to building, ATM	1995	400 (65,000 est. in 1996)
Israel Telecom	Israel	DAVID-Settop	n/a	ADSL	1996	n/a
Telecom Italia	Italy (Rome and Milan)	Bell Atlantic (OS-9/DAVID)	VOD, Homeshopping ("Video Magic")	ADSL	1995	1,000 (500 each)
Nakano City TV	Japan (Tokyo)	Fujitsu (OS-9/DAVID)	customised data for corporate clients (including TV news clips)	HFC/ATM	1995	300
NTT	Japan (Urayasu City)	SGI	VOD, Information-on-demand, Games, Telephone services	ADSL/ATM	Q3/95-3/97	300-500
Nethold	Netherland (Hoogvliet)	Irdeto	NVOD, Homeshopping	IPPV (Impulse Pay Per View)	1/94-9/95	1,000
Korean Telecom	South-Korea	Samsung (OS-9/ DAVID)	n/a	ADSL	1995	100
Arab Group International	Saudi Arabia	n/a	n/a	MMDS	1996	n/a
Singapore Telecom	Singapore	Philips	VOD, News-on-demand, Telelearning, Homeshopping	ADSL/ATM	Q3/95	300
Swiss Telecom	Switzerland (Grenchen)	Philips	VOD, PPV, Telelearning, Homeshopping, Games	Coax	1995	400
Svenska Kabel TV	Sweden	Digital, Vela Research	VOD	Fibre/Coax	1995	500
Computer and Communications Research Lab.	Taiwan (Hsinchu Science Park)	15 Taiwan-based companies	VOD, Homeshopping	Fibre/Coax	7/95	200 (up to 1,200)
British Telekom	UK (Colchester, Ipswich)	Apple	VOD, News-on-demand, Telelearning, Homeshopping, Homebanking, Games	ADSL/ATM	mid 1995-7/96	2,500
Cambridge Cable	UK (Cambridge)	Online Media, Acorn	VOD, News-on-demand, Telelearning, Homeshopping, Homebanking, Games	Fibre/Coax (end-to-end ATM)	9/94	250 (phase 3: Q4/95)
Westminster Cable	UK (London)	n/a	VOD	Fibre/Coax	11/95-3/96	
Bell/ Nynex/ TeleWest	UK	n/a	n/a	n/a	1996	1,000
AMUSE	Belgium (Mons), Germany (Munich), Italy (Milan), UK (Cambridge), Portugal (Aveiro), Switzerland (Basel), Iceland	Online Media, Acorn	VOD, News-on-demand, Homeshopping, Games, Internet access	Fibre/Coax, ADSL/ATM	1996	<100

It is remarkable that national telecoms started most interactive TV trials. But as TV relies on contents rather than distributional technologies, the outcomes of many trials might be questionable.

Sources

7.1.2.6 Cable World, Kabel+Satellit, Press Releases; ECC research (1996)

Most German interactive trials have ceased quietly. Several problems, from distributional technology and contents offered to the number of participants, stopped the trials, sometimes before they even started.

7.1.2.7 Interactive TV-Trials in Germany

Company	Location	Settop	Technology	Services	Start	Duration	# Homes
Deutsche Telekom	Berlin	Alcatel/SEL	Hybrid Fibre Coax	PPV, NVOD, VOD, Homeshopping, City-Information,Tele-Health Service, Telelearning	15.02.1995 - 2/96	1 year	50
	Berlin Alt-Glienecke Spandau	to be decided	Hybrid Fibre Coax	PPV, NVOD, VOD, Homeshopping, City-Information,Tele-Health Service, Telelearning	7/97	2 years	400
	Hamburg	Philips Nokia ? (dbox)	Twisted pair/Coax	PPC, Services-on-Demand, Public Information, Homeshopping, Telebanking	Q2/3 96 not yet (9/96) started	2 years	1,100 100 fully interactive
	Cologne/ Bonn	to be decided	Hybrid Fibre Coax	VOD, Services-on-Demand, Homeshopping	Q1 96 not yet (9/96) started	1-2 years	100
	Leipzig	to be decided	Fibre to the curb (OPAL)	Services-on-Demand	autumn 1996	1 -2 years	100
	Stuttgart	Hewlett Packard	Hybrid Fibre Coax, ATM	VOD, Public Information Homeshopping, Telelearning, Games	Q1 96	(2 years) was stopped in 11/96	4,100
	Nuremberg/ Munich	Beta-Technik (dbox)	Hybrid Fibre Coax, ATM (München), ADSL (Nürnberg)	PPC, PPV, NVDO, VOD, Services-on-Demand, Public Information, Homeshopping	11/95-5/97	2 years	1,100
Vebacom (InfoCity-NRW)	Essen, Dortmund, Duisburg, Bonn, Cologne, Düsseldorf, Wuppertal, Oberhausen	to be decided (Nokia ?)	Hybrid Fibre Coax, ATM	PPV, VOD, Public Information, High Speed Internet access, Homeshopping, Telelearning,Games	Q1.97	2 years	10,000
RWE Telliance AG (Multimedia Gelsenkirchen)	Gelsenkirchen	to be decided	Hybrid Fibre Coax, DECT	VOD, Public Information, High Speed Internet access, Homeshopping, Telebanking, Telelearning, Tele-Health Service	Q1 96 not yet (9/96) started	3 years	1,000
TKG Saar	Saarland	Nokia	Twisted pair/Coax	Information-on-demand, Telelearning, Homeshopping	1996 not yet (9/96) started	to be decided	to be decided
AMUSE (Advanced Multimedia Services for Residential Users)	Munich	Online Media, Acorn	Fibre/Coax, ADSL/ATM	VOD, News-on-demand, Homeshopping, Games, Internet access	5/96-8/96	3 month	11

Sources

7.1.2.7 University of Siegen, Sonderforschungsbereich 240; Kabel+Satellit, Funkschau, ECC research (1996)

7.1.2.8 Digital/Interactive Bouquets in North-America

Market	Operator	Service	Launch	Satellite (Cable)	Cond. access supplier	Decoder suppliers	Channels	Decoder cost
USA: DBS								
USA	Hughes/AT&T	DirectTV	Jun 94	DBS-1/DBS-2	News Data-com/ Thomson	Thomson, Panasonic, Sony Toshiba, Sanyo, Samsung, Hitachi, Daewoo, Uniden, Philips	175	$499
USA	Hubbard	USSB	Jun 94	DBS-1/DBS-2	News Data-com/ Thomson		23	$499
USA	Primestar Partners	Primestar	Apr 94	Satcom K-1	General Instrument	General Instrument	80	$10/month rental
America North-East	Echostar	DISH Network	Mar 96	EchoStar-1	Nagra-Kudelski	Ecostar/ Sagem	120	$199 (special deal)
USA	Tee-Com	Alphastar	Jul 96	AT&T Telstar 402R	Irdeto/ Betatechnik	Tee-Comm. TV/COM Samsung	100 +	$699
USA	News Corp/MCI	ASkyB	1997	Loral/Space Systems	News Datacom	to be decided	100 +	to be decided
USA	Tele-Communications Inc.	speculative DTH venture	n/a	TeleSat Canada satellites	General Instrument?	General Instrument?	100 +	to be decided
USA: cable/microware								
Connecticut	Tele-Communications Inc.	TCI Digital TV	Okt 96	cable	General Instrument	General Instrument	80	$400-$450
USA	Comcast	digital cable	1997	cable	General Instrument	General Instrument	80?	$400-$450
USA	Cox Communications	digital cable	1997	cable	General Instrument	General Instrument	80?	$400-$450
Atlanta	BellSouth	Americast	1996	cable	to be decided	Scientific-Atlanta	100 +	to be decided
Connecticut	SNET	Americast	1997	cable	to be decided	to be decided	100 +	to be decided
Florida	GTE	Americast	1996	cable	to be decided	to be decided	100 +	to be decided
USA	Ameritech	Americast	1996/97	cable	to be decided	to be decided	100 +	to be decided
USA	Nynex	Tele-TV	1996/97	microwave	Thomson	Thomson	120	to be decided
USA	Bell Atlantic	Tele-TV	1996/97	microwave	Thomson	Thomson	120	to be decided
USA	Pacific Telesis	Tele-TV	1996/97	microwave	Thomson	Thomson	120	to be decided
USA	Time Warner	Pegasus	1997	cable	PowerKey (Sientific A.)	to be decided	100 +	to be decided
Canada								
Canada	BCE/TeeComm CSC/WIC	ExpressVu	1997	Anik E1/ TeleSat	to be decided	to be decided	110	to be decided
Canada	Hughes/Power Broadcasting	Power DirectTV	1997?	to be decided	News Datacom/ Thomson	Thomson	100 +	to be decided
Canada	Shaw DBS Ventures	Homestar	1997?	to be decided	to be decided	to be decided	100 +	to be decided
Calgary	Shaw Communications	digital cable	Okt 96	cable	General Instrument	General Instrument	100 +	$400-$450
Canada	Rogers Cablesystems	digital cable	1997	cable	General Instrument	General Instrument	80?	$400-$450

Direct Broadcasting Satellite, cable or microwave are the current distributional systems of choice for digital television in North America.

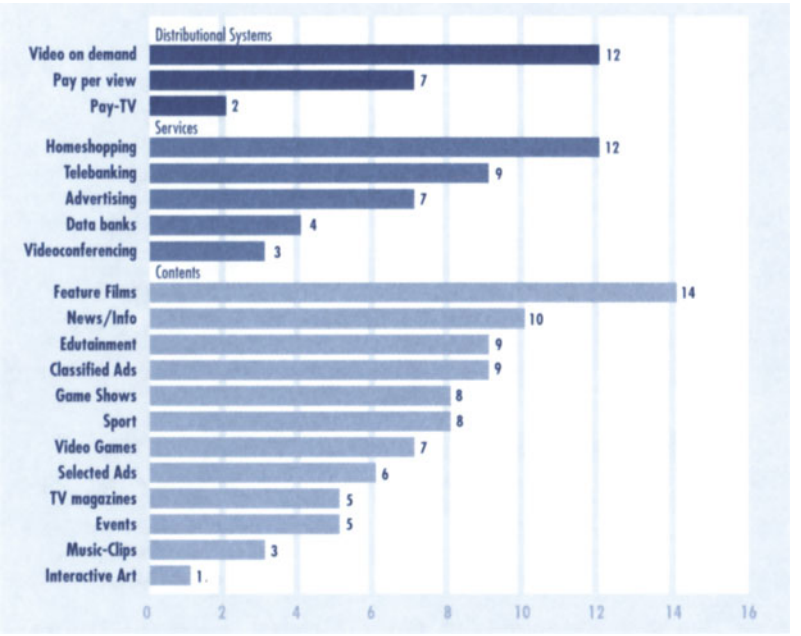
Sources:

7.1.2.8 Screen Digest, August 1996, p. 177-184; ECC research (1997)

Split into different categories, the preferences become clear: The (financially) most promising distributional system appears to be video on demand, although the demand for VoD is not clear yet. The most attractive services are expected to be homeshopping and telebanking.

7.1.2.9 Interactive Trials: Ranking of Contents Offered

As of 16 trials researched



Normally, it is hard to research the prefences of consumers regarding future applications. But homeshopping – already broadcasting on free TV channels and widely tested in interactive trials – is regarded as "most attractive" by only half of the respondents. A sufficient target group to make good business, but who will take care of much higher valued services like adult education and edutainment?

7.1.2.10 Most Attractive Applications of Interactive Services in the U.S., 1995

Service/Application	Respondents listing applications among most attractive
TV on demand	74 %
Movies on demand	73 %
Adult education	72 %
Electr. TV guide	72 %
Edutainment	69 %
Home shopping, information	52 %
Enhanced news	52 %
Home shopping, tickets	50 %
Home shopping, gifts	43 %
Home shopping, catalogue	42 %

Sources

7.1.2.9 MGM MediaGruppe München (1996); ECC (1997)
7.1.2.10 Hewlett Packard; Screen Digest July 1996

7.1.3 Compression-Techniques

7.1.3.1 Timeframe of Compression Standards Evolution

	Standard	Characteristics
1999	–	
1998	MPEG 4	• For coding of audiovisual objects even at very low data-ratios (< than 64 Kbit/s) • For videoconferencing and mobile services • ISO, IEC
1997	–	
1996	DVB-T	• European standard, based on MPEG 2 • for terrestrial broadcasting
1995	DVB-S/DVB-C	• European standard, based on MPEG 2 • for broadcasting via satellite (-s) or cable (-C)
1994	MPEG 2 (MPEG 3)	• For TV and Videosystems in computing and broadcasting • Compatibility for HDTV (former MPEG 3) included • Standard for highquality Video-Transmissions • Issued by ISO, IEC
1993	MPEG 1	• Standard for the compression and transmission and digital storage of audio (0.2 Mbit/s) and video-data (1.15 Mbit/s) using groups of pictures (GOPs) • Not capable of transmitting live pictures i. e. for Videoconferencing • for CD-ROM, CD-I, max. 1,5 MB/s • Issued by ISO, IEC
	Indeo	• developed from DVI
	Video CD	• Video CD expansion of MPEG 1 for CD-I and Video-CD (Full Motion/Screen)
1992	Quicktime	• Multimedia extension of the systemsoftware for Apple Macintosh • High res graphics on JPEG basis • company standard for animation and video • Issued by Apple Computers
	Video for Windows	• Multimedia extension of the systemsoftware for Windows, IBM-compatible PCs • combination of company-standards and DVI-standard • Issued by Microsoft Corp.
1991	H. 320	• Group of standards for video-phone and (desktop) videoconferencing • Most important standard: H.261, standard for synchronous transmission of audiviosual services • Issued by ITU-T
1990	JPEG (p 64) (Joint Photographic Expert Group) Motion JPEG	• Still video, digital pre-press • Standards for the compression of high res Graphics • Different picture qualities possible • Issued by ITU-T, ISO • for professional video processing • videos are compressed picture by picture, similarities in pictures are not used for data-reduction
1989	DVI (Digital Video Interactive)	• Chipset for multimedia uses of PCs • Standard for compression and transmission of audiovisual data • different versions for real-time and for asynchronous transmission PC based video from CD-Roms • two levels of compression (PLV, RTV) • Issued by Intel Corp.

The recent history of data-reduction standards demonstrates the increasing power of algorithms to transmit ever more complex images with ever less data.

Sources

7.1.3.1 MGM MediaGruppe München (1994); Booz Allen & Hamilton (1995); Reimers (1995)

In the 1980s data reduction standards were perceived as a chance to increase the quality of broadcasting by transmitting one HDTV programme via a normal TV channel. In the 1990s data reduction standards are planned to transmit several compressed programmes over a single ordinary TV channel – but with a reduced picture quality.

7.1.3.2 Standards of Broadcasting-Quality and Receivable Signal-Quality

	Terminology	Quality	Channel capacity*	Reception-Situation/Receivable Signal-Quality		
				Home (Cable, Satellite, Roof-Antenna)	Portable (Antenna)	Mobile (Bus, Car)
LDTV	Low Definition TV	Videostandard (VHS)	16	LDTV	LDTV	LDTV
SDTV	Standard Definition TV	actual TV-Standards (PAL, NTSC)	up to 10	SDTV	SDTV	LDTV
EDTV	Enhanced Definition TV	Broadcast-/Studiostandards (Beta)	4	EDTV	SDTV	LDTV
HDTV	High Definition TV	High Res-TV	1	HDTV	SDTV	LDTV

Transmitting a movie takes a lot of time: Only a high-speed network can transfer low quality pictures (comparable to VHS) in any acceptable time. Even compressed PAL picture quality would take too long for video on demand.

7.1.3.3 Transferring One Hour of Film: Quality Levels and Necessary Time

1 h of film as	required storage in MB	Transfer time with a bandwidth of...		
		64 kbit/s (ISDN)	10 Mbit/s (LAN)	140 Mbit/s (VBN)
PAL uncompressed	75,000	2,616 h	1020 min	60 min
MPEG2 compressed - HDTV	18,000	624 h	240 min	17 min
MPEG2 compressed - SDTV (PAL)	1,800	63 h	24 min	100 sec
MPEG2 compressed - LDTV (VHS)	675	23 h	9 min	39 sec

A reduction quota of 1:469 for ISDN-data and 1: 28 for moving TV images shows the power of reduction standards with even more powerful standards yet to come.

7.1.3.4 Datacompression Ratios

Signal source	Input of data Mbit/s	... Reduced to Mbit/s	Reduction standard
Audio CD (Stereo)	1,4	–	–
ISDN	30	0,064	ITU-T/H.261
CD-ROM	30	1	MPEG 1
TV-signal (uncompressed, SDTV-quality, = VCR)	166 - 216	3 -6	MPEG 2
TV-signal (uncompressed, EDTV-quality, = PAL)	166 - 216	6 -9	ITU-R 601
HDTV (uncompressed)	663 - 1,800	24 (for 663)	MPEG 2 (extended)

Sources

7.1.3.2 Prognos (1995); Reimers (1995)
7.1.3.3 Riehm/Wingert (1996)
7.1.3.4 MGM MediaGruppe München (1994); Prognos (1995); Reimers (1995)

* Number of compressed channels to be broadcasted on a single ordinary TV-Channel of 8 Mhz

7.1.3.5 Comparison of Digital Radio Systems

System	Digital Codification	Distribution	Receiver	Conditions of reception	Area of distribution	Data-service	Status
DSR	uncompressed	satellite, cable	DSR-receiver (S 200)	stationary	Europe	similar to RDS	introduction 1989
DAB	compression, Musicam	terrestrial	DAB-receiver (S 2,700)	mobile, stationary, portable	local, nation-wide	variable	pilot-project 1995
IBOC	compression, Musicam, MPEG2	terrestrial "in band", FM & AM	special receiver	mobile, stationary, portable	local, nation-wide	up to 64 Kbit/s	tested
ADR	compression, Musicam	satellite, TV-signal transponder	ADR-receiver (S 350)	stationary	Europe	9.6 Kbit/s	introduction 1995
SARA	compression, MPEG2	satellite, transponder	SARA-receiver (S 700)	stationary	Europe	9.6 Kbit/s	introduction 1995
StarMan	compression	satellite	special receiver	mobile, stationary, portable	worldwide	possible	introduction in some years
"Computer"-Radio	compression, different formats	computer-networks	computer	stationary	worldwide	yes	available in the non-commercial area

Different compression systems for digital radio broadcasting are competing for a future standard. Digital radio would make it possible to transmit more stations over a single frequency. But it is still questionable whether the consumers as well as the radio stations are willing to pay for new equipment, as the audible advantages are little.

7.2 Economics / Forecasts

7.2.1 The Multimedia-Market of Forecasts

Institute	Area of prognosis	Year	Turnover	Year	Turnover	Time	Growth
Frost & Sullivan	Multimedia-market: for hard- & software in the U.S.	1990	3.0 bn US$	2000	22.0 bn US$	10 years	x 7
Prognos	Multimedia-market: in Western Europe	1991	0.4 bn ECU	1995	2.5 bn ECU	4 years	x 7
Market Vision	Multimedia-market: worldwide	1993	3.0 bn US$	1998	35.0 bn US$	5 years	x 11
Ovum	Multimedia-market for business-clients in Europe	1993	0.2 bn US$	2000	21.7 bn US$	7 years	x 109
Telekom	Multimedia-services: for business-clients in Germany	1994	0.3 bn DM	2000	7.0 bn DM	6 years	x 23
Alex Brown	Interactive advertising (low forecast)	1995	25 m US$	1999	1.25 bn US$	5 years	x 50
Alex Brown	Interactive advertising (high forecast)	1995	25 m US$	1999	1.5 bn US$	5 years	x 60
Forrester Research	World-Wide-Web: revenues in the US	1995	37 m US$	2000	2.6 bn US$	6 years	x 70
Morgan Stanley	Internet: related total revenues	1995	15.9 bn US$	2000	79.1 bn US$	6 years	x 5
Jupiter Communications	Internet: advertising revenues	1996	300 m US$	2000	5 bn US$	5 years	x 17
Forrester Research	On-line advertising: revenues worldwide	1996	74 m US$	2000	2.57 bn US$	5 years	x 35
Cybertrends	Interactive Television: revenues in Europe	1996	38 m US$	2000	2.74 bn US$	5 years	x 7
Cybertrends	Interactive Television: revenues in the U.S.	1996	46 m US$	2000	4.91 bn US$	5 years	x 11

A whole range of high flying forecasts are accompanying the expected multimedia/ interactive/ online "revolution". It will be interesting to check in the year 2000 which forecasts were just highly overestimated hypes and which will be correct. – Maybe not too many.

Sources

7.1.3.5 Riehm / Wingert (1996)
7.2.1 ECC (1997)

Within five years Cybertrends estimates that the revenues from interactive TV will grow from 0 to more than 1 billion dollars both in Europe and the U.S.

7.2.2 Forecast: Potential Revenue from Interactive TV in Europe and in the U.S.

In million US$

	1995	2000	2005
Europe			
Basic CATV revenues	35	1,131	5,711
Interactive TV revenue	0	1,131	8,566
Traffic/telephony revenue	3	385	3,373
Other (advertising/retail)	0	100	500
EUROPE TOTAL	**38**	**2,747**	**18,150**
USA			
Basic CATV revenues	46	1,964	6,727
Interactive TV revenue	0	1,964	10,090
Traffic/telephony revenue	0	785	5,045
Other (advertising/retail)	0	200	800
USA TOTAL	**46**	**4,913**	**22,662**

Are Europeans less prepared for interactive services of the future? In Germany, France and the UK only half of the VCR-households rent videos on a regular basis. Also, mailorder and ordering goods or services over the telephone are in most European countries far less usual than in the U.S..

7.2.3 Usage of VCRs, Telephone and Mailorder in the Household

As % of households

	USA	Germany	UK	France	Italy
Video Rental of VCR-Households*	82	35	36	30	45
Households with a VCR	88	63	74	60	57
Regular usage of the Telephone for...					
Ordering Pizza/Food	45	21	14	1	11
Homebanking	25	2	3	1	19
Ordering Tickets	23	12	15	1	9
Information services	17	13	2	12	14
Lotteries/Betting	21	1	26	23	1
Mailorder of...					
Clothes, Shoes	39	29	23	10	37
Household Items, Furniture	23	8	12	4	7
Books, Cassettes, CDs	39	10	11	7	20
Gifts, Food, Others	29	12	2	4	10

Sources

7.2.2 Cybertrends; Screen Digest July 1996
7.2.3 Inteco/TV World; Media Perspektiven 10/95

* Percentage of Households that has rented one or more videos during the last month

7.2.4 Market Volumes for Interactive Services, 1992

Selected fields in the U.S. and the UK, expenditures per year in US$ (estimates)

	USA		UK	
	Total in bnUS$	per TV-household	Total in bnUS$	per TV-household
Video-rental	12	130	2	93
Videogames (Hard-& Software)	5	54	1	46
Telephony-services (private & business)	150	1,628	35	1,620
Online-services (private & business)	35	380	7	324
Mail order businesses	70	760	6	278
Total	272	2,952	51	2,361

From mailorder to homeshopping, from video rentals to video on demand? – Existing business sectors that could turn into potential interactive services accounted for more than US$ 2,300 per TV household and year both in the UK and the U.S.. But whether people are willing to change their habits and buy from interactive services is not quite sure yet.

7.2.5 Forecast: Interactive TV-Households in Europe

Figures in thousands

	1994	1995	1996	1997	1998	1999	2000
Belgium	0	9	23	49	95	165	266
Denmark	0	17	26	38	54	74	100
France	0	16	41	89	172	303	492
Germany	0	93	206	407	729	1,205	1,856
Greece	0	0	0	5	11	20	35
Ireland	0	4	7	13	20	30	43
Italy	0	0	1	7	24	69	165
Netherlands	0	16	39	84	174	322	543
Portugal	0	0	0	1	5	13	32
Spain	13	36	84	174	322	543	844
UK	60	107	177	274	404	566	760
Rest of Europe	0	16	34	65	116	193	303
Total	73	314	639	1,207	2,115	3,468	5,353

The number of households receiving interactive TV services could rise significantly: From 1997 to the year 2000 the number of ITV-households, according to the forecast, could grow by more than 400 percent. That is provided that the technologies, the contents and consumer acceptance are there.

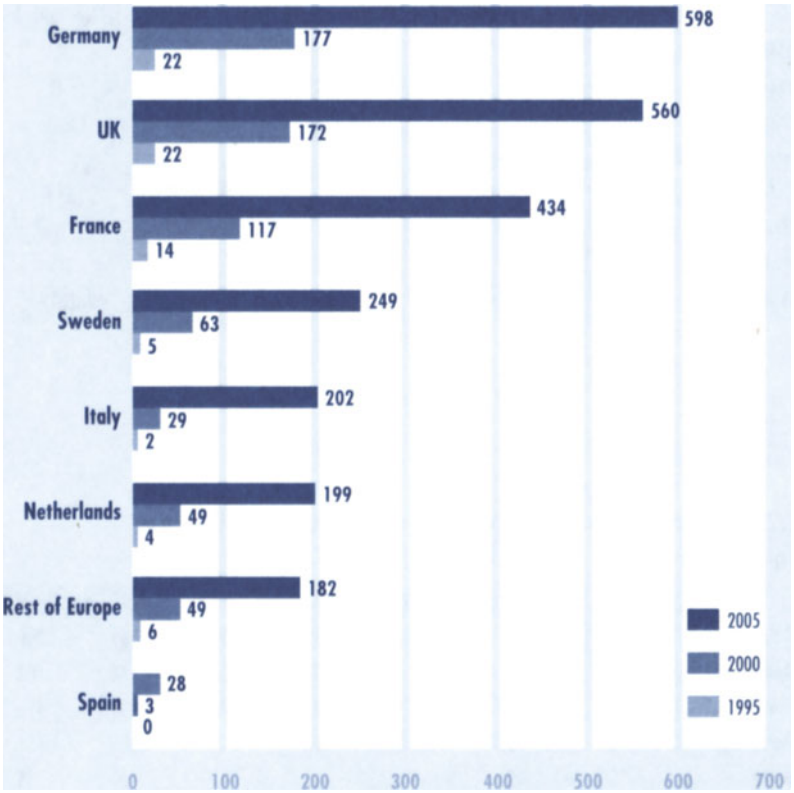
Sources

7.2.4 Huntink/Leyten (1994); Riehm/ Wingert (1996)
7.2.5 Ovum/Screen Multimedia 2/95

Multimedia based learning and education (CBT) as well as edutainment could become big revenue sources, especially for content providers: The market size in Europe alone is estimated to rise to US$ 2.5 billion within the next ten years.

7.2.6 Forecast: Spending on Edutainment and Multimedia Education

In million US$



Sources

7.2.6 Datamonitor, Screen Digest June 1996

8. Internet

8.1 History/General Overview

8.1.1 Classification of On-line Services

Information Sites/Public Relations
- most private homepages and companies presenting themselves on the Web

Information Sites + added services/information
- BMW with a detailed display of certain products

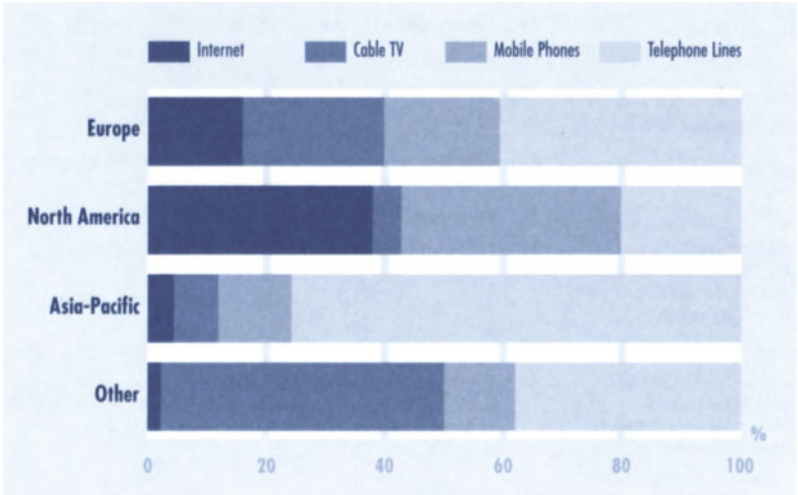
New Products/Services specified for Internet
- My World (Karstadt), Daily Focus

Pure Internet Service Provider
- Netscape

Internet Service and/or Access Provider (combining the above)
- AOL; Compuserve; MSN

No one knows quite what the term on-line services stands for. Here is a classification of the different services offered on the Web, that could all be subsumed under the term on-line services.

8.1.2 Distribution of New Subscribers Added, 1994



The rise of the Internet in the USA: While the Internet accounts for more than 40 percent of new subscribers in America, Europe reaches not even half of these growth figures.

Sources

8.1.1 ECC (1997)
8.1.2 ITU (1995)

Small steps of technology, but big steps for society? – The software and hardware developed over the last 25 years has allowed the Internet to grow from an academic network to a worldwide medium.

8.1.3 Internet History - Developments of Concepts, Technology and Software

Technology	Year	Concepts/Software
	early 50s	First concepts of symbiotic relations between machines and human beings; first network-projects, e.g. SAGE, an aerial reconnaissance system
	62	Packet switching: Concept to fracture a message into blocks, all using different paths to their destination by using distributed networks. Idea by Paul Baran of the RAND Corporation
First computer system with keyboard, mouse and windows introduced by Douglas Engelbart at Xerox PARC	68	
	69	ARPAnet born. A Department of Defense Project in the US, it was designed to be nuclear war proof. The net included 4 nodes.
	70	NCP introduced as an improved version of TELnet which made it simpler to connect to a remote computer. NCP enables host-to-host communication.
TIP(Terminal IMP), software that makes it possible to address more than one terminal per host.	71	
	72	SNDMSG and CPYNET: The first e-mail programme
Ethernet designed as a solution to tie computers together – a first prototyp of LAN	73	FTP introduced. File transfer protocol standardised the transfer protocol for data. Bob Kajn and Vint Cerf created the idea of an early Internet design: a network of networks linked together by gateways, routing computers standing between the various networks to hand off messages from one system into the other.
	74	TCP (Transmission Control Protocol) designed as revised version of the TELnet and marked the true beginnings of internetworking.
	75	Defense Commission becomes responsible for APRAnet
	76	
	77	First TCP for UNIX
Intel introduced 8086	78	
	79	Usenet News A project started at Duke University, soon snow-balled in popularity – and in the number of newsgroups
	80	MILnet created as a pure military network
Modem-Speed: 300 bps The Hayes SmartModem 300 was introduced. For most users it was fast enough	81	CSNET founded as a network for Computer Science Research
	82	
Modem-Speed: 1200 bps. Intel 286 introduced. EARN connected European Research Communities	83	TCP/IP (Internet Protocol) established in ARPAnet Fido created; the first e-mail and mailbox sytem which makes it possible to exchange not only programmes but also news. MCIMail launched

Technology	Year	Concepts/Software
Apple Macintosh introduced	84	DNS (Domain Name System) established. Helps to organise the system better.
	85	
NSFNet created. The US-National Science Foundation's 56K backbone lasted only two years before upgraded	86	
	87	
Modem-Speed: 9600 bps	88	CERT (Computer Emergency Response Team) constituted as reaction to the "worm accident" caused by R. Morris.
NSF backbone in the U.S. upped to T1 (1.5 Mbps)	89	First connection between commercial e-mail system by MCI and the Internet
	90	Archie, the first Internet search engine released. Helps to find information referring to a substring or keyword. ARPAnet ceased to exist.
	91	Gopher introduced. It is designed to help students find information quickly, but soon supplanted by the Web
NSF backbone in the U.S. upped to T3 (45 Mbps). First Mbone broadcast	92	World Wide Web born. Developed by the CERN researchers Robert Cailliou and Tim Lee Berners. First online radio broadcast over the Net in March (MBONE audio multicast) and first video broadcast (MBONE video multicast) in November.
	93	Mosaic introduced. Developed by Illinois University student Marc Andreesen, a graphic userinterface eased the usage of the Internet
Modem-Speed: 14400 bps More than 10 trillion bytes over the NSFNET-Backbone per Month.	94	Netscape Navigator debuts, as an enhanced commercial version of Mosaic. Internet's 25th anniversary.
Modem-Speed: 28800 bps Intel P 6 introduced	95	Microsoft Explorer debuts JAVA introduced, an object orientated programme language designed by Sun Microsystems; it helps to play movies and music on a Web site: a new generation of browsers is planned
MCI backbone in the U.S. upgraded to OC-3 (122 Mbps) and upgraded again to 622 Mbps	96	
	97	
	98	
	99	
IPnG - Internet Protocol next Generation	2000	MegaNet

Sources

8.1.3 Internet World, October 1996; Hafner/Lyon (1996); Lundquist/Lynch (1996); Glaser (1996); ECC research (1997)

8.2 Technology/Software

Although the growth rate of shipped PC is expected to decline, more and more PCs users are going to get on-line via e-mail or Internet.

8.2.1 Development of PCs, Modems and Internet Usage Worldwide, 1984 - 2000

In millions; figures from 1996 - 2000 are estimates

Year	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00
Worldwide																	
PC Unit shipments	9	9	10	12	14	16	19	25	34	43	51	60	69	77	85	94	102
Year to Year growth in %	–	2	12	17	17	14	19	32	36	25	20	18	14	12	11	10	9
PCs in use*	23	28	35	40	45	52	61	74	94	121	153	188	222	256	290	324	358
% with 2 PCs**	2	2	3	5	6	7	8	10	15	20	22	23	25	28	30	33	37
Number of PC users	23	27	34	38	43	49	56	67	80	96	119	144	167	184	203	217	225
Year to Year growth in %	–	22	24	13	11	14	16	19	20	21	23	21	15	11	10	7	4
Number of e-mail users***	1	1	2	3	4	5	6	8	12	18	25	35	60	80	130	180	200
% of PCs with e-mail access	4	4	6	8	9	10	11	12	15	19	21	24	36	43	64	83	89
Number of Internet/ Web users	<1	<1	<1	<1	<1	<1	<1	<1	1	1	3	9	23	46	81	122	152
% of PCs with Internet access	1	1	1	1	1	1	1	1	1	1	3	7	14	25	40	56	68
Number of Web servers****	–	–	–	–	–	–	–	–	0.00	0.00	0.02	0.10	0.60	1.20	2.20	3.30	4.00
USA																	
PC unit shipments	6	6	6	7	7	7	8	10	13	16	20	23	25	28	31	33	36
Year to Year growth in %	–	-6	3	8	6	0	12	23	37	24	21	15	11	11	10	8	9
% of PCs produced in the US	70	65	60	55	50	44	41	38	39	38	39	38	37	37	36	35	35
PCs in use*	16	18	21	22	23	23	25	28	36	46	59	71	82	94	105	115	127
% with 2 PCs**	5	6	7	8	10	15	20	22	23	25	28	30	33	37	42	48	50
Number of PC users	15	17	20	20	20	19	20	22	28	35	43	50	55	59	61	60	63
Year to Year growth in %	-	12	14	5	0	-5	3	11	27	24	22	17	10	8	3	-2	6
Number of Internet/ Web users	<1	<1	<1	<1	<1	<1	<1	<1	1	1	2	6	14	25	41	58	67
% of PCs with Internet access	–	–	–	–	–	–	–	–	2	2	5	12	25	43	67	98	106#
Homes with PCs and modems	–	–	–	–	–	–	–	–	–	4	6	10	20	25	30	32	35
Year to Year growth in %	–	–	–	–	–	–	–	–	–	–	50	67	100	25	20	7	9

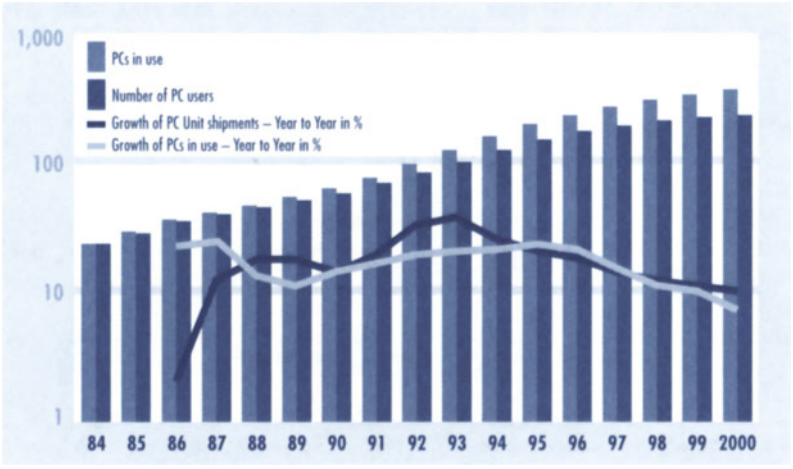
Sources

8.2.1 Lycos; Web Crawler; Morgan Stanley (1996): The Internet Report

* Assumes that PCs have an average lifetime of four years;
** Estimated Number of PC users that use second PCs at home or office or as portables;
*** Estimates of all e-mail accounts. It is also estimated that 50 % of the e-mail users in 1995 could be connected to the Internet;
**** Estimates of Morgan Stanley;
\# Figure appears questionable

8.2.2 The Development of PC-Users and PC Sales Worldwide, 1984 - 2000

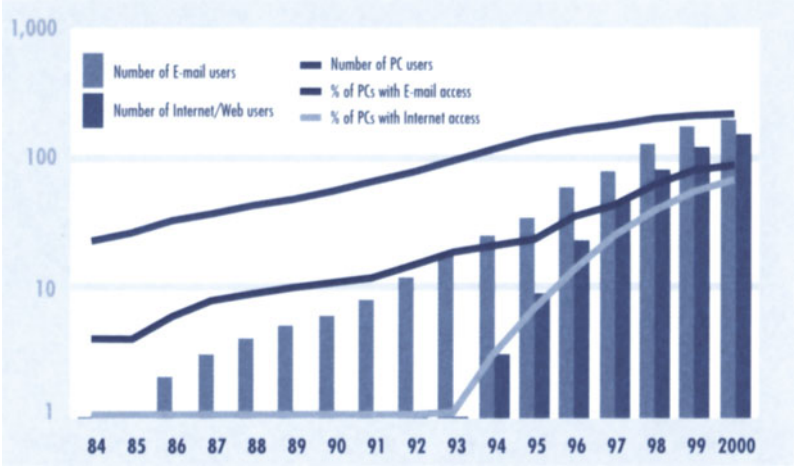
In millions; figures from 1996 - 2000 are estimates


1,000
100
10
1
PCs in use
Number of PC users
Growth of PC Unit shipments – Year to Year in %
Growth of PCs in use – Year to Year in %
84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 2000

The markets are going to be saturated. The golden age of PC sales was between 1986 and 1989. Since 1993, growth in PC sales and probably since 1996 growth of PCs in use has been slowly coming down. Will these figures determine the limits of growth of the on-line society?

8.2.3 The Development of Internet and E-Mail Use Worldwide, 1984 - 2000

In millions; figures from 1996 - 2000 are estimates


1,000
100
10
1
Number of E-mail users
Number of Internet/Web users
Number of PC users
% of PCs with E-mail access
% of PCs with Internet access
84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 2000

More and more PCusers are going to be on-line. It is estimated that by the year 2000 about 70 percent of the PCs worldwide will have Internet access at their disposal and 90 percent will have e-mail access.

Sources

8.2.2 Lycos; Web Crawler; Morgan Stanley (1996): The Internet Report
8.2.3 Lycos; Web Crawler; Morgan Stanley (1996): The Internet Report

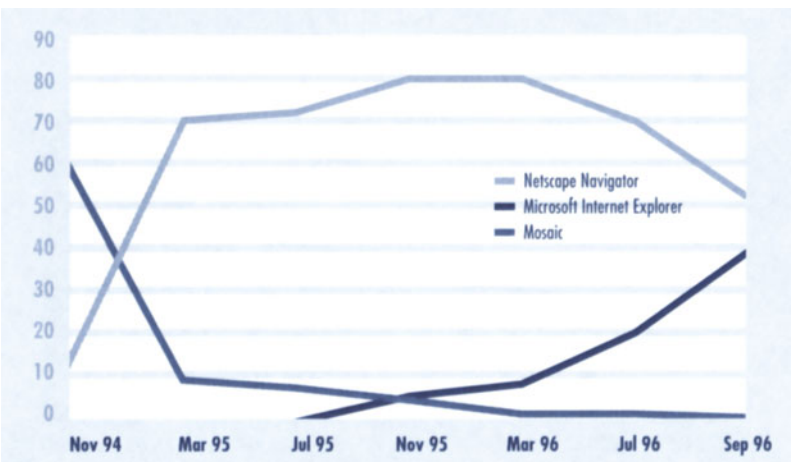
The limits of interactive television: Only cable offers enough bandwidth to transmit a larger amount of data in any reasonable time. Split into smaller data-slices, video on demand could become feasible as a service. Today's Internet users in Europe only dream of a cable TV connection for Internet usage.

Netscape lost 30 percent market share within six months: Microsoft's heavy involvement pays off; the Internet Explorer is gaining more and more market share in the Internet world, coming along with Windows 95 for free.

8.2.4 Connection Competitors on the Internet

	Speed	Hardware Cost	Local Usage	Cost	Pros	Transmission Times for... simple image, 2 MB	complex image, 16 MB	short video, 72 MB	long video, 4.3 GB
Modem	28.8 Kb/s	$ 100 to $ 250	Virtually $0 in the US to normal European telecom rates	Ubiquitous, inexpensive, easy to set up and use	Slow	2.3 min	18.5 min	1.4 h	3.5 days
ISDN	56 - 128 Kb/s	$ 199 to $ 700	Virtually $0 in the US to normal European telecom rates	Fast, digital, runs on regular phone lines, reasonable prices, setup getting easier	More expensive than standard phoneline/modem, limited support by Internet Service Providers	35.7 sec	4.8 min	21.5 min	21.4 h
ADSL	640 Kb/s (upload) 6,14 Mb/s (download)	$ 1,000 (today) $ 300 - 500 (projected)	About $100 per month projected (US West forecast)	Very fast, runs on regular phone lines	Performance unknown, won't be available for 1 to 2 years	1.3 sec	10.7 sec	48 sec	48 min
Cable	500 Kb/s -10 Mb/s	$ 300 to $ 500 (projected)	$ 35 to $40 per month projected (based on Canadian services)	Very fast and inexpensive	Won't be available for 1 to 2 years, may require phone line stream up	0.5 sec	4.0 sec	18 sec	18 min
DBS - Direct Broadcasting Satellite	400 Kb/s -3 Mb/s	unknown	unknown, but receiver technology has to be purchased	Very fast	High investments necessary, not before 1997	n/a	n/a	n/a	n/a

8.2.5 Internet Browsers - Percentage of Users Worldwide



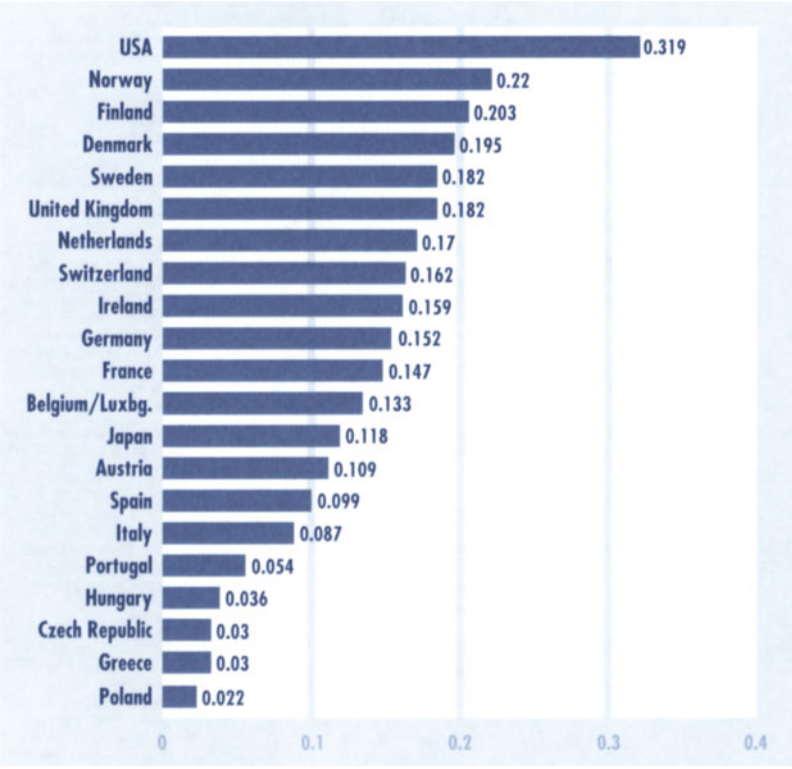
Sources

8.2.4 Internet World October 1996; Screen Digest April 1996
ISDN: Integrated Services Digital Network. A digital communication service for voice and data transmission that runs over regular telephone lines, typically at speeds up to 128 kbps.
ADSL: Asymetric Digital Subscriber Line. The technology, originally developed by the Bellcore Labs, Morristown, N.J. for the interactive TV market, can provide telephone, video-on-demand, networking and fax, all on conventional twisted copper wiring. ADSL could theoretically provide all services simultaneously due to signal processing with digital filters, that make up for bandwidth. Currently (10/96) tested for Internet usage in Virginia by Bell Atlantic, by GTE in Irving, Texas and by US West in Boulder, Colorado.
8.2.5 Intersé; Focus (1996)

8.3 Users/Usage

8.3.1 Users/General

8.3.1.1 Computers per Capita, 1994



Technological lead: Statistically, every third American had a computer in 1994. Europeans were far behind these figures.

8.3.1.2 Estimated World-Wide Number of Users of New Media

In millions

Users of:	1995	1996	1997	1998	1999	2000
PCs	144	167	184	203	217	225
E-Mail	35	60	80	130	180	200
Internet/Web	9	23	46	81	122	152
Online/Hybrid	8	13	18	23	27	30

Sources

8.3.1.1 Morgan Stanley (1996)
8.3.1.2 Morgan Stanley (1996), p. 3-1

Current users of the Internet in Europe could be divided into four target groups, differentiated by their rational or emotional and active or passive approach to Internet services. The European Commission has tried to describe their characteristics, thus enabling providers to cast their services.

8.3.1.3 Characteristics of Four User Groups

User Group Characteristics	Knowledge Worker	PC Enthusiasts		Time Constrained Users	Leisure Seekers
Description	Professional information seekers, who intensively use new information and communication technologies/ new media for work-related purposes	Early adopters of new media and IC technologies, primarily for private, but also for business purposes, usually from their home or home-office		Mostly professionals who expect to have instantaneous access to targeted information and knowledge; depend on information, but are usually not the ones who actively search for it	People using media in their spare time mostly for entertainment (and for basic information) purposes in a free-of-learning format and channel ("plug-and-play")
Main Media Needs	- information - communication	- entertainment - curiosity and adventure - technical information		- information	- entertainment - playfulness - curiosity
Total Number in EU 1996	30-35 million Estimate is based on data by Eurostat. "Knowledge Workers" include researchers, students, technical and scientific workers, and an estimated percentage of medical doctors, journalists and business users.	20 million		15-20 million Estimate is based on data by Eurostat. Figure includes high level executives in various businesses, lawyers and judges, bankers, medical doctors or people in a leading position in public administration	200 million, 120-150 million intensively. Figure based on the assumption that about 80 % of the population over 14 years are "Leisure Seekers" (e.g. after work, on weekends etc.), with varying degrees of intensity. About 120-150 million people are intensive "Leisure Seekers", according to their current amount of TV consumption (> 3 hours/day).
		computer professionals (about 2 m, and an additional estimate for PC-Enthusiasts with other demographic backgrounds.	25-35% of students, 15-20% of teenagers		
Typical Professional Backgrounds	• researchers, journalists, students • trade • bankers • law	• computer professionals • technicians	• students • kids and teenagers	• executives • consultants • lawyers & judges • medical doctors • leading positions in public administration	(no typical professions -TV users in general)
Archetype of User	University researcher with online access and high level PC literacy	A) Online service subscriber, 28-35 y. old, male, university education, high income	B) Student (20-25 year old, spending much time, low disposable income)	Executive, 45-55 year old, occasionally using the PC / laptop (however, as little as possible)	Heavy TV user (>3 hours per day), esp. in evening, "couch potato", channel surfer
Acceptance of Media Expenditure	- service is usually paid by third parties, such as university or employer;	professionals who are "leisure time PC-freaks" are less price sensitive	students are highly price sensitive users;	willing to pay a lot if product optimally meets information needs and has time-cost-benefit (e.g. compared to newspaper)	home users accept one-time hardware costs, but are very price sensitive with regard to ongoing expenditures for EP products (subscriptions etc.); media budgets are limited to 3-5% of disposable income
Media Time Budgets	1-2 h/day	Big differences between various groups, e.g.: Professionals ("Leisure- time enthusiasts" and Students)		30 min/day	2-5 h/day
Growth Potential	- info search is an integral part of the job - academic Web users report that they are online more than one hour per day - KW access EP typically from their offices; info search in electronic media is integral part of the job; time budget for EP will increase if services substitute info search in alternative distribution channels (libraries)	- PC Enthusiasts tend to substitute TV using time for PC/online time. Surveys show that online users in general cut back on watching TV. So do kids and teens who are frequent PC users. - preferred time of use: evening hours. Online service subscribers spend 45 min/day on average online.		- "time constrained" users have by definition little time to use media; time is the critical issue to decide whether products are successful - must be time-saving - no growth potential; users may substitute newspaper reading with EP usage, but will not increase their total time budgets	- average TV-watching time in Europe: between 150 min. (Swe., Fin.) and 220 min. (Ita., Sp.) - 120-150 mio. people are heavy TV watchers (> 3h/day) - consumer media time budgets have increased in the 70s and 80s, but have been stagnating in the last years – users will substitute some of their TV watching for interactive services delivered via TV

User Group Characteristics	Knowledge Worker	PC Enthusiasts		Time Constrained Users	Leisure Seekers
Acceptance of Advertising	- KW expect advertising-free information - some (informative) advertising is accepted	- advertising is regarded as a business necessity; playful and informative advertising is accepted as interesting content - strategy: users want to be "simultaneously informed and entertained", but not be "advertised to"		- premium services paid for are expected to be advertising free - some forms of advertising accepted (if information-oriented)	- although users complain about "too many ads", advertising is accepted as it keeps prices low (e.g. TV) - TV users have developed advertising avoiding strategies: 50% of commercial TV viewers report that they zap to another programme during commercial breaks; – to receive attention, advertising must be entertaining, e.g. include game features
Advertising Potential	Constraints: - lack of clear user group profile - dominance of non commercial usage, high advertising resistance	Drivers: - high advertising acceptance - target group for ICT market - users with high income and high motivation to purchase ICT		Drivers - market with clear profile and financially interesting target group Constraints: - limited advertising acceptance	Drivers: - size: mass market - used to advertising from TV Constraints: - heterogeneous user group - financial limitations
Preferred Equipment	PC	PC Laptop		PC Laptop	TV (Game) Consoles
General Info- and Content-Expectations	- well structured information - clipping services - comprehensive indexes - search tools - in-depth background information on specific topics	- global content sources ("global village inhabitants") - state-of-the-art multimedia contents - entertainment programmes are welcome, if they allow for active participation and interactivity - transaction		- tailored and targeted premium information services - optimal time-cost-benefit ratio	- entertainment and information in a free-of-learning format, i.e. simple means to select between, or navigate, the many (digital) TV and special interest channels - multisensory appeal
Communication Needs/ Preferences	- communication network with professional community (e.g. researchers) - tools that allow news, articles or clippings to be mailed directly from within an EP application or be easily cut and pasted into other documents - desktop conferences: file- and application sharing	PC Enthusiasts are major participants of newsgroups	esp. kids and teens are enthusiastic users of chat lines	- highly mobile users: need to access knowledge everywhere and at any time, i.e. mobile communications and data-transfer applications; for this purpose, content availability is more important than (multimedia) formats – information services with desktop- or video conferencing tools (incl. file- and application sharing)	- communication tools for social interaction with relatives, friends, peers etc., e.g.; – On-line "Talk"; chat-lines - city-net forum - "Single-Channels"
Service Needs	- Business Information Systems (BISs) with comprehensive indexes and access to far reaching archives - job-related online-platforms - e-mail news services - Computer Based Training (CBT) programmes	- technical support, shareware - transaction services: home banking, home ordering	- games with high level of interactivity and playfulness	- information services with an improved time-cost benefit ratio for user - PDA (Personalised Digital Agents)	- Purchasing benefits (with comfortable navigation tools) - wide variety of products and services: special interest and educational programmes, infomercials, home shopping

Sources

8.3.1.3 European Commission: Electronic Publishing (1996); shortened by ECC (1997)

Sports and general information seem to be among the most wanted topics on the Internet.

8.3.1.4 WWW Individual Usage in the U.S.

News/Information/Entertainment (as a share of 47.2 percent of the overall reach), June 1996

	Reach* (sorted)	Usage days per person	Page requests per usage day	Viewings per page request	Seconds per viewing	Minutes per page request	Minutes per usage day	Minutes of usage per person
CNET.COM	6.6	2.12	5.03	2.66	39.33	1.74	8.76	18.60
ZDNET.COM	6.5	1.63	3.72	2.67	50.52	2.25	8.35	13.62
PATHFINDER.COM	5.8	1.46	3.99	2.53	49.35	2.08	8.39	12.11
DISNEY.COM	4.7	1.43	6.72	2.39	35.75	1.42	9.55	13.66
SPORTSZONE.COM	3.7	2.38	9.80	2.14	42.75	1.52	14.94	35.52
INTELLICAST.COM	3.4	2.63	3.44	2.02	36.65	1.24	4.26	11.19
USATODAY.COM	3.3	2.86	5.30	1.92	40.57	1.30	6.89	19.71
WEATHER.COM	3.1	1.91	4.59	1.85	27.30	0.84	3.86	7.37
MACROMEDIA.COM	2.7	1.25	3.18	2.28	33.70	1.28	4.07	5.10
NANDO.COM	2.4	1.31	2.44	2.02	30.27	1.02	2.48	3.24
CNN.COM	2.2	2.58	3.30	2.02	57.08	1.92	6.35	16.41
UNITEDMEDIA.COM	2.0	2.50	2.34	2.59	31.15	1.34	3.14	7.84
STRIP-TEASE.COM	2.0	1.23	8.59	2.24	38.33	1.43	12.28	15.09
PCMAG.COM	1.8	1.27	3.20	1.93	41.90	1.35	4.31	5.49
NBC.COM	1.8	1.30	3.50	1.82	42.03	1.27	4.45	5.80
HOTWIRED.COM	1.7	1.10	3.13	1.92	45.57	1.46	4.57	5.01
IMDB.COM	1.7	1.43	8.47	2.28	18.75	0.71	6.04	8.63
HAPPYPUPPY.COM	1.7	1.59	2.57	2.63	47.36	2.07	5.33	8.45
DISCOVERY.COM	1.6	1.46	3.63	2.11	47.90	1.68	6.11	8.93
HOMEARTS.COM	1.6	1.18	4.48	1.70	44.16	1.25	6.07	7.19

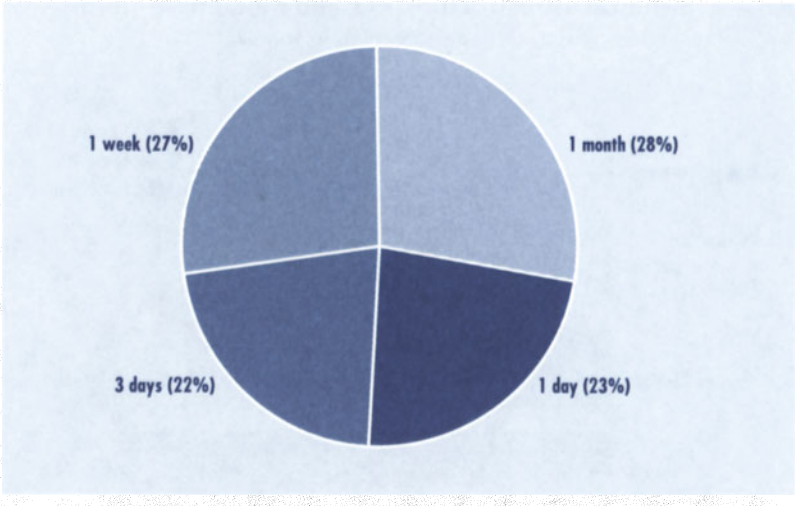
Sources

8.3.1.4 PC METER, Broadcasting & Cable, September 16 1996

* One point in the rating represents an estimated number of 120,000 - 150,000 users

8.3.1.5 Average Time Needed Learning to Navigate the Internet

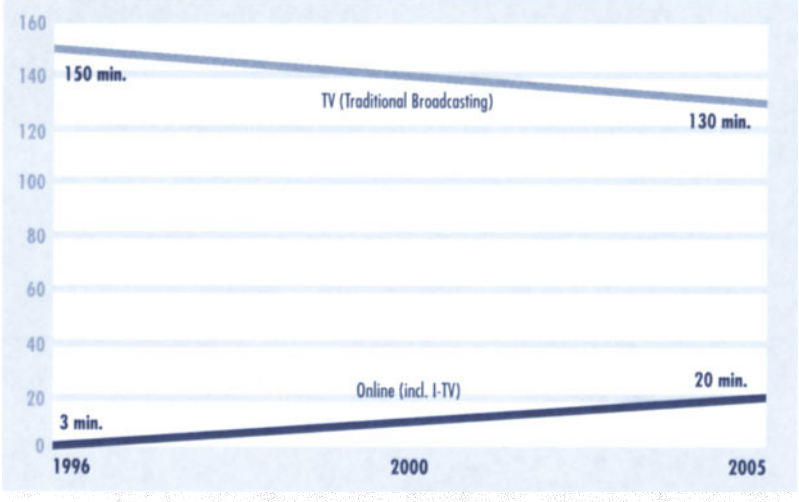
% of respondents in the UK



It's not as easy as it should be: More than half of the Internet users in the UK said they had spent between one week and one month learning to navigate the Web.

8.3.1.6 Time Budgets: Will On-line Surfing Eat Up TV Time?

In minutes per day



Will Webvertising gain a share of TV advertising budgets? – It was found that people who use on-line services reduce their TV viewing time, not their reading time. 36% of the WWW users confirmed that they surfed the Web instead of watching TV on a daily basis.

Sources

8.3.1.5 Durlacher Multimedia Intervid, Screen Digest 1996
8.3.1.6 European Commission: Electronic Publishing (1996)

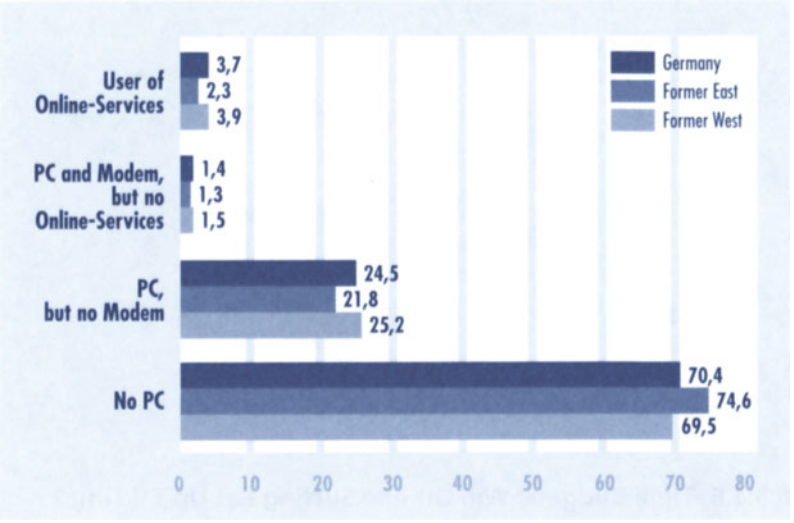
8.3.2 Usage Germany

We have tried to collect all available data regarding Internet usage in Europe and chose Germany as an example of how the Internet is used and perceived.

8.3.2.1 Technical infrastructure: PCs and Modems in Germany

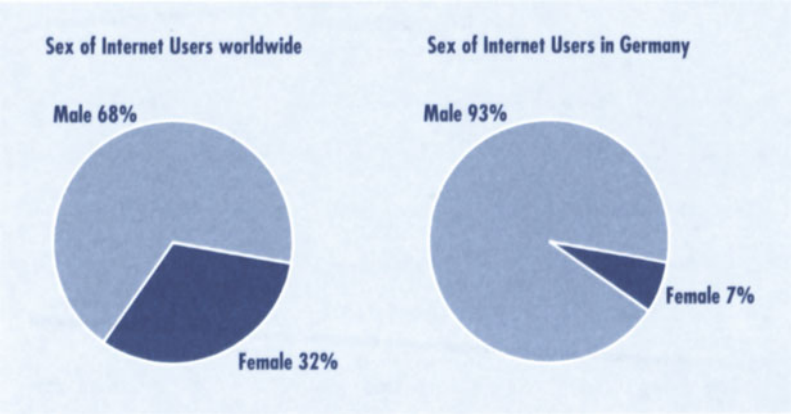
As % of all households; n = 10,146 screening interviews

Only 3.7 percent of all households in Germany have on-line access, but more importantly about 70 percent of all households do not even have a PC.



8.3.2.2 Internet Usage: A Domain of the Male?

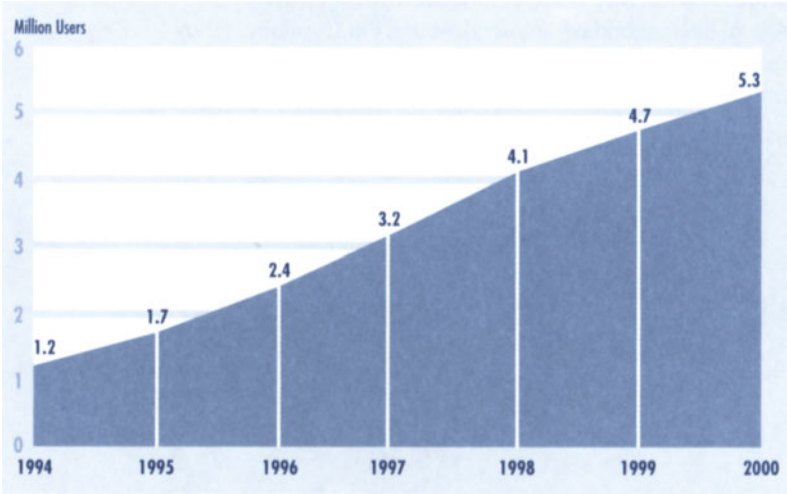
The Internet is predominantly male, especially in Germany. With only 7 percent female Internet users, the Internet appears to remain heavily biased.



Sources

8.3.2.1 MC Online-Monitor 1/96, Media-Daten & Fakten - Net Book 1/96
8.3.2.2 DDB Needham International (1996); IST-Online-Umfrage 95/96; Fraunhofer-Institut; Spots Online Oct.-Dec. 1996

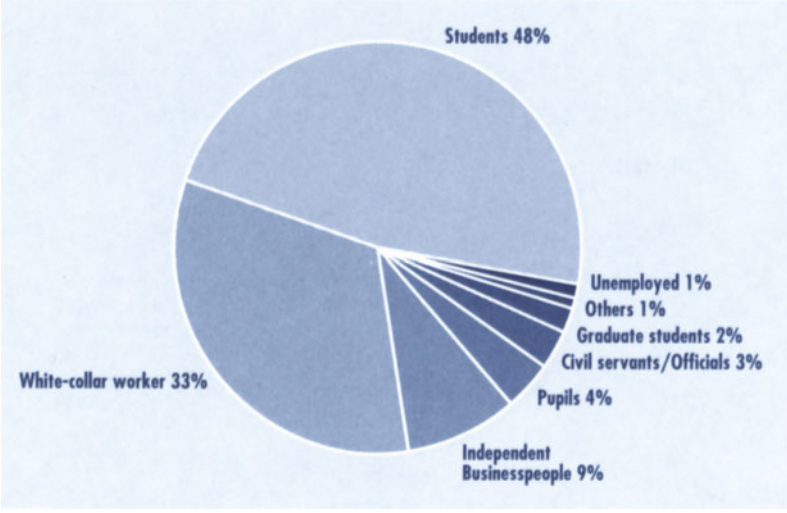
8.3.2.3 Forecast: Users of On-line Services in Germany, 1994 - 2000



By the year 2000 there will be more than 6.5 percent of the German population using on-line services.

8.3.2.4 Internet Usage: A Domain of the Better Educated

Profession/Education of Internet users in Germany, 1996



49 percent of all Internet users are students or graduate students, another 33 percent are white-collar workers. The Internet in Germany is still a domain of the better educated.

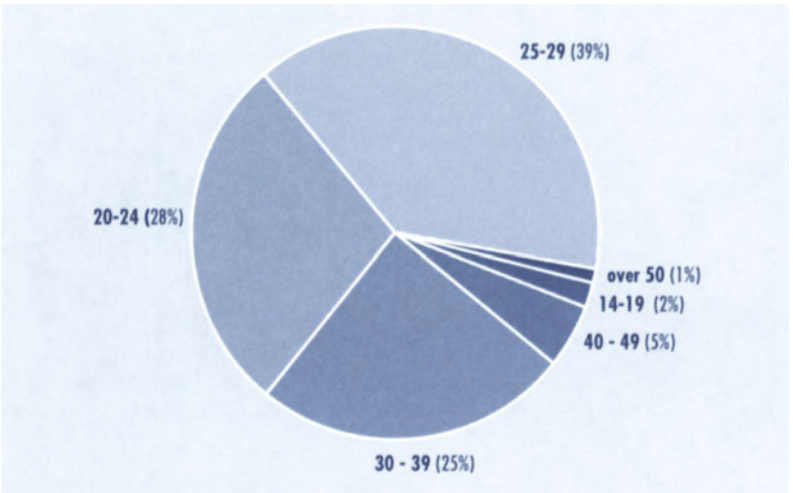
Sources

8.3.2.3 Media Daten (1996): Net Book
8.3.2.4 EMNID/Der Spiegel, February 1996

With about 70 percent of all Internet users in Germany being less than 30 years old, German Internet usage appears to be a domain of youth.

8.3.2.5 Internet Usage: A Domain of Youth?

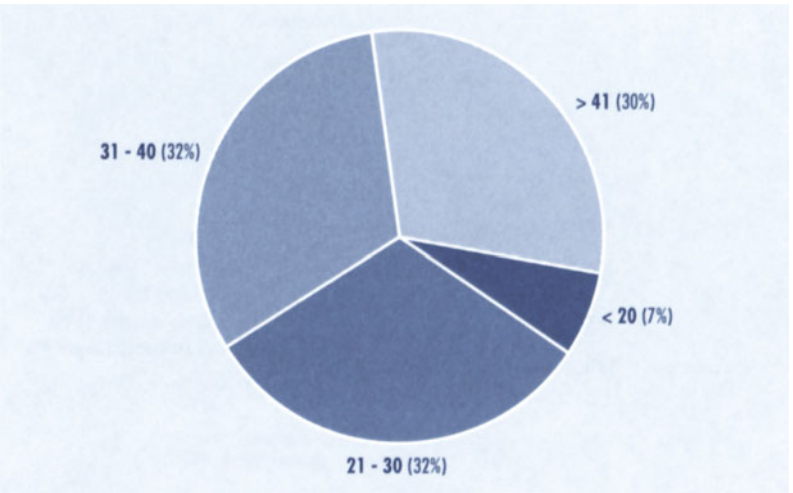
Age of Internet and on-line services users in Germany, 1996



Other sources, other results: With only 38 percent being under 30, but 32 percent being between 31 and 40 years old, age groups of Internet users seem to be more balanced.

8.3.2.6 Age Groups of "On-liners"

In % of all on-line users; n = 10,146 screening interviews of which 910 were on-line users

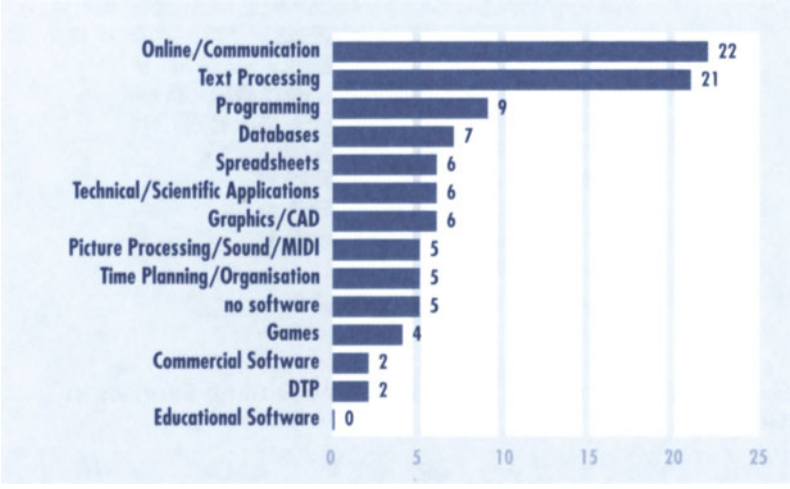


Sources

8.3.2.5 ST-Online-Umfrage 95/96; Fraunhofer-Institut; Spots Online Oct.-Dec. 1996
8.3.2.6 MC Online-Monitor 1/96, Media-Daten & Fakten - Net Book 1/96

8.3.2.7 Software Used Daily

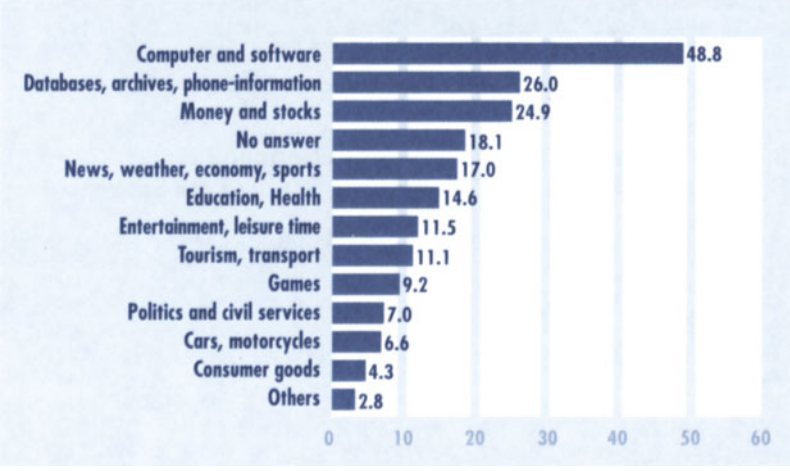
Figures in percent for Germany



It's not the video games generation that goes on-line in Germany, but mostly the people who are working seriously with their computers: Text processing, programming and data bases are among the most applied software tools.

8.3.2.8 Most Used On-line Services in Germany

In % of users, more than one answer possible; n = 1,063 in-depth-interviews



Is the Internet just a tool for downloads? As Internet usage and computer literacy in Germany correlates, most of the Internet users are highly interested in services related to computers and software.

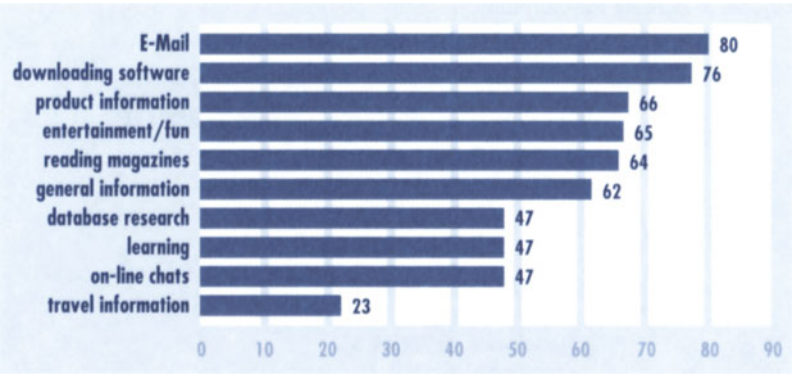
Sources

8.3.2.7 IST-Online-Umfrage 95/96; Fraunhofer-Institut; Online Spots Oct.-Dec. 1996
8.3.2.8 MC Online-Monitor 1/96, Media-Daten & Fakten - Net Book 1/96

E-mail and software downloads are the most appreciated services of the Internet. On-line chats are only used by half of the Internetizens, but entertainment and fun are generally valued.

8.3.2.9 Internet Usage in Germany, 1996

Figures in percent



Besides practical work aspects, Internet usage not only provides the feeling of being ahead of the crowd but also reduces TV viewing and reading time. This might become a threat for TV broadcasters, as their most valued viewers, the young, educated and affluent, are changing media consumption habits.

8.3.2.10 Reasons of PC Users for Using On-line Services in Germany, 1996

	West	East
helps to solve practical questions	42.1	38.1
to obtain knowledge	41.4	30.2
keeps one in touch with new trends	41.2	29.2
stimulates curiosity	38.1	29.6
leads to less TV viewing	29.1	25.2
provides topics to talk about	26.5	22.7
gives a feeling of being a part of it	22.0	28.8
gives a feel of life that one likes	18.7	18.9
shows different ways of living	17.4	8.7
to pass one's time	16.1	6.0
leads to less reading (books, newspapers, magazines)	16.8	24.5

T-Online is currently the only provider in Germany offering computer banking services. Obviously, people appreciate this service.

8.3.2.11 Usage of On-line Services in Germany

Figures in percent, Base: 1,063 on-line users, 976 users of the mentioned on-line nets

	Internet/WWW	Compuserve	T-Online	Total
information	74.1	82.4	71.5	74.4
downloads	55.6	65.9	37.0	48.1
payment transactions	11.1	17.6	70.3	42.8
forums	37.0	52.2	19.9	31.2
shopping	13.0	14.3	34.7	24.4
dialogue with providers	23.3	17.0	15.1	17.8
games	17.8	19.2	11.9	15.1
others	8.1	4.9	6.9	6.1

Sources

8.3.2.9 MC Online-Monitor 1/96, Media-Daten & Fakten - Net Book 1/96
8.3.2.10 Typologie der Wünsche/Intermedia 96/97, p. 52
8.3.2.11 MC Online Monitor 1/96; Media Perspektiven 9/96, p. 490

8.3.2.12 On-line Information Interests of Germans

Question: "For some time it has been possible to access different information – on-line – with a modem and via telephone lines. In which possible usages on this list would you be interested?"

Not Interested	
Nothing at all	45 %
Service	
Homebanking, payment transactions	26 %
Bookings for events, theatres, concerts, movies	23 %
Plans/Schedules/Calendars for events, theatres, concerts, movies	23 %
Travel: Information about Trains and Flights	22 %
Travel: Bookings, Reservations	21 %
Teleshopping, ordering goods	18 %
News	
Weather	24 %
Getting international news	24 %
Actual TV programmes	23 %
Sports news	19 %
Job offers	18 %
Preprints of newspapers and magazines	17 %
Professional	
Fax/E-Mail	12 %
Transmitting data	10 %
Company and business information	9 %
Database research	8 %
Stock/Share prices	7 %
Advertising	
Advertised Information	5 %
Entertaining Advertisements	4 %

Homebanking is top of the list: Not only customers would very much like to handle their accounts at home. Probably also banks would like to see a growth in Internet-banking as it could save them a lot of money by down-sizing their number of branches.

Sources

8.3.2.12 Stern Anzeigenabteilung: Marken Profile 6; Media Perspektiven 9/96, p. 490
Age: 14 to 64, percentage of interviewees;
Base: 10,033 people between 14 and 64 years old, representing 50.86 Mio. in Germany

20 percent of the German population could be regarded as definitely or maybe interested in going on-line. A potential of at least 16 million people.– Not an interconnected society yet, but a serious potential for business.

8.3.2.13 Readiness for On-line Service Connections

Question: "Are you or your household definitely planning or considering getting a connection to an external network within the next two years?"

		Definitely	Maybe	No
Total		2	12	86
	West	2	13	85
	East	2	8	90
Sex	Male	3	17	80
	Female	1	7	92
Age	14 - 29 years	4	18	78
	30 - 49 years	2	11	86
	50 - 64 years	0	6	94
Occupation	in training, student	5	22	73
	working	2	12	86
Household income in DM	3000 - 4500/month	2	11	88
	4500 - more/month	3	17	80

Internet usage enters German homes: The next wave of soaring Internet usage could be expected, as PC users are planning to get on-line at home.

8.3.2.14 On-line Services Used in Germany Privately or at Work by PC Users

Figures in percent of all PC users; planned usage within the next 12 month

	Currently personally used... at work		private		Usage planned... at work		private	
	West	East	West	East	West	East	West	East
America Online/AOL	0.7	0.0	0.8	0.3	0.3	0.2	1.0	0.3
Compuserve	1.8	0.9	2.3	0.3	0.6	0.1	0.8	0.6
Europe Online	0.8	0.0	0.8	-	0.4	0.0	0.5	0.3
Internet	5.1	5.4	5.1	2.8	2.5	1.6	4.0	2.1
Microsoft Network/MSN	2.6	3.2	1.4	0.6	0.9	0.1	1.3	0.1
T-Online/BTX	5.0	3.4	5.1	2.1	1.5	0.6	1.8	2.0
other nets	3.8	3.2	2.9	2.3	1.4	1.0	1.3	0.7
currently not using on-line services	60.1	65.9	66.9	71.8	–	–	–	–
no plans to use on-line services within the next 12 months	–	–	–	–	34.3	43.0	35.9	42.3
On-line usage Total	14.2	13.5	12.1	7.2	5.5	3.0	8.1	5.8

Sources

8.3.2.13 Stern Anzeigenabteilung: Marken Profile 6; Media Perspektiven 9/96, p. 490
Age: 14 to 64, percentage of interviewees
Base: 10,033 people between 14 and 64 years old, representing 50.86 Mio. in Germany

8.3.2.14 Typologie der Wünsche/ Intermedia 96/97, p. 52

8.4 Internet - Economics

8.4.1 Internet Revenues

8.4.1.1 Forecast: Worldwide Number and Value of Internet Transactions Compared with Credit Card

	1994	2000	2005
transactions (000m)	neg	7.0	17.0
value (000m US$)	neg	600	1,250
value per transaction (US$)	–	85.71	73.53
card transactions (000m)	9.3	16.5	30.5

7 billion Internet transactions with an average value of 85.71 dollars are estimated to turn the Internet by the year 2000 into a medium transferring services and goods worth 600 billion dollars.

8.4.1.2 Forecast: Worldwide Number of Internet Transactions by Type in the Year 2000

In millions

Type	Transactions
premium credit cards / purchasing cards	1,750
digital purses	1,400
electronic cheques	1,050
unsecured credit / debit cards / cheques	700
point of sale loans	350
unbanked accounts	350
EBT systems	350
super debit cards	350
real time wire transfer	210
stored-value media	140
ATM derivates	70
other	280
Total	7,000

Credit cards are expected to be the transaction tool of choice for Internet commerce by the year 2000.

Sources

8.4.1.1 Killen & Associates, Screen Digest July 1996
8.4.1.2 EITO (1996)

With a total 123.6 million dollars from Internet revenues in 1996, the size of Internet related commerce is once again estimated to be small. By the year 2000 this figure could rise to 920 million dollars. Interactive TV appears in this respect even less relevant.

8.4.1.3 Forecast: U.S. Electronic Commerce Revenues and Number of Active Shoppers by Medium

	1996	1998	2000	2002
Cable TV				
Active shoppers (millions)	4.5	4.7	4.8	4.7
Spending/shopper (US$)	667	716	766	817
Interactive TV				
Active shoppers (millions)	0.01	0.1	0.4	0.8
Spending/shopper (US$)	1,100	1,160	738	899
On-line services				
Active shoppers (millions)	1.5	3.0	4.7	6.8
Spending/shopper (US$)	553	513	504	495
Internet				
Active shoppers (millions)	1.2	2.5	3.9	5.4
Spending/shopper (US$)	103	186	236	274
Commercial Server				
Active shoppers (millions)	0.3	0.9	1.3	1.6
Spending/shopper (US$)	413	399	418	433
Total				
Active shoppers (millions)*	7.5	11.2	15.1	19.3
Spending/shopper (US$)	544	522	517	523
Total revenue (in US$ mio.)	4,089	5,842	7,807	10,095

With Internet transaction revenues of 122 million dollars in 1996, a more moderate and apparently more realistic forecast expects less than one billion dollars in the year 2000.

8.4.1.4 Forecast: Revenues from Transactions in the Electronic Marketplace

In US$ million

	1994	1995	1996	1997	1998	1999	2000
Business on-line	217	299	407	489	642	963	1,444
Consumer on-line	108	147	204	306	367	523	743
Internet	20	54	122	244	458	660	949
CD-ROM	10	16	24	49	92	138	206
Kiosk	5	11	24	37	55	83	124
Screen phone	2	11	16	37	55	110	165
Interactive TV	0	5	16	61	165	275	495
Total	362	543	813	1,223	1,834	2,752	4,126

Sources

8.4.1.3 Baskerville Communications, Screen Digest June 1996
8.4.1.4 Electronic Marketplace 1995 (Simba Information); Screen Digest, June 1996

* includes some overlap

8.4.1.5 Model Calculation for Electronic Publishing: Cost and Revenue Structure of a Local On-line Service

In ECU

	Year 1	Year 2	Year 3
Revenues			
Display advertising	50,000	80,000	150,000
Classified	–	10,000	50,000
Web development for businesses	150,000	200,000	250,000
Internet access providing	250,000	300,000	350,000
Subscriptions (premium services)	–	20,000	50,000
Transactions	–	–	50,000
Revenues total	450,000	610,000	900,000
Costs			
Basic investment	800,000	100,000	–
Personnel	250,000	500,000	700,000
Hardware/software, bandwidth	80,000	120,000	150,000
Overhead	30,000	40,000	50,000
Costs total	1,160,000	760,000	900,000
TOTAL operating balance	-710,000	-150,000	0
Percentage of print readership using the on-line Publication	< 1 %	< 2-3 %	2-3 %

Break-even within three years. – A promising calculation, but most electronic publishers are still waiting for it to be borne out.

8.4.1.6 Forecast: Turnover Worldwide for Electronic Data Interchange (EDI)

In million US$

The worldwide EDI market could rise to 1.9 billion dollars by 1998, thus doubling within four years.

Sources

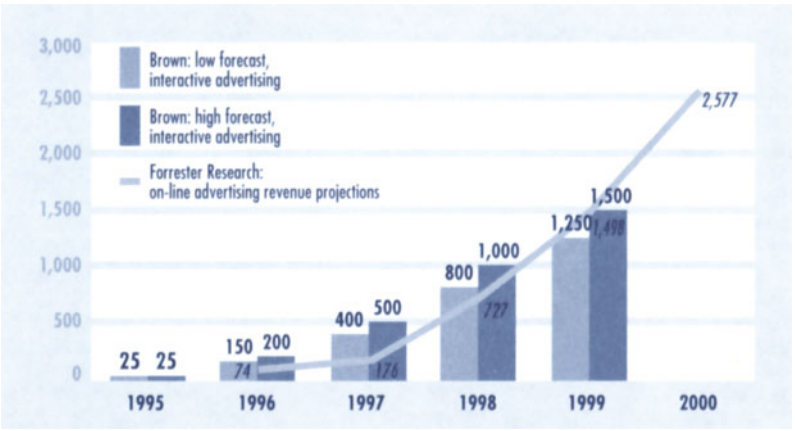
8.4.1.5 European Commission: Electronic Publishing (1996)
8.4.1.6 Market Intelligence Research Company (MIRC); ISDN Commission NRW (1996)

8.4.2 Internet Advertising

Different Forecasts, similar results: With about 1.5 billion dollars in 1999, interactive advertising could become a reasonable revenue source for Internet service providers.

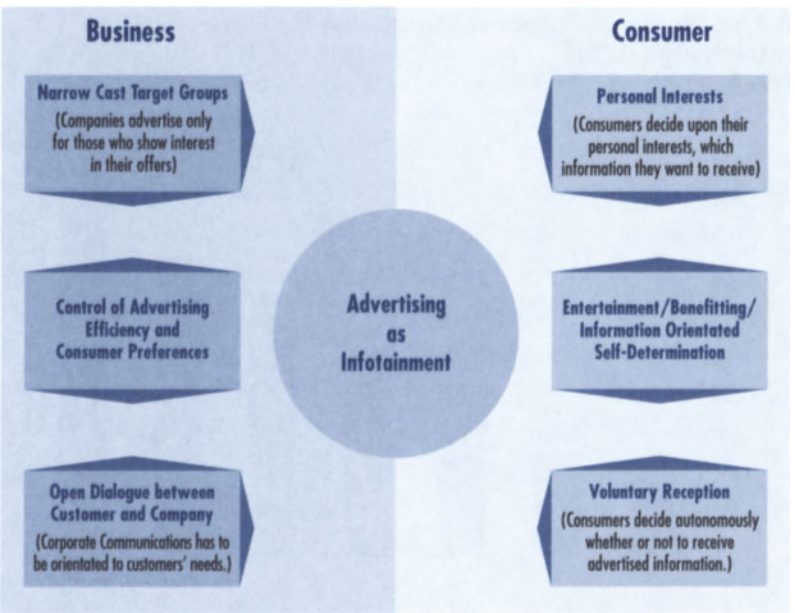
8.4.2.1 Forecasts: Interactive Advertising Market Worldwide

In million US$



Advertising on demand: Webvertising will only get attention if it offers added values. Infotainment and gratifications could become the key techniques to get consumers interested in the advertisers' messages.

8.4.2.2 Interactive Advertising: Infotainment and Consumer Choice


Business
Consumer
Narrow Cast Target Groups
(Companies advertise only for those who show interest in their offers)
Personal Interests
(Consumers decide upon their personal interests, which information they want to receive)
Control of Advertising Efficiency and Consumer Preferences
Advertising as Infotainment
Entertainment/Benefitting/ Information Orientated Self-Determination
Open Dialogue between Customer and Company
(Corporate Communications has to be orientated to customers' needs.)
Voluntary Reception
(Consumers decide autonomously whether or not to receive advertised information.)

Sources

8.4.2.1 Alex Brown; Forrester Research; Screen Digest June, July 1996
8.4.2.2 Burda Anzeigen Marktforschung (2/95); Forrest/Mizerski (1996); ECC (1997)

8.4.2.3 Four Rules of Interactive Advertising

1. Advertisements are most likely to be noticed, if they relate to the subjects or interests the consumer is currently dealing with.	2. Advertisements will be perceived more positively if they contain a lot of funny and surprising elements which entertain the consumer.	3. Advertising information has to be tracked quickly. Software speed, the reaction time of the system, is crucial for successful interactive advertising, otherwise consumers will leave the spot before they have received any information.	4. Modular construction should allow consumers to choose autonomously how they want to receive which advertising information.

8.4.2.4 Cost for Placing an Ad Banner on the Internet

Advertising pricing model, calculated on basis of a sample of European on-line newspaper services; In ECU per month

Placement	Guaranteed Number of Impressions within 4 Weeks	Price for Static Banner (194 x 96 Pixel)		Price for Interactive Banner (194 x 96 Pixel)	
		Price/Month	CPM*	Price/Month	CPM*
Homepage	50,000	500	10	2,000	20
Overview Pages to Platform Sections	25,000	250	10	500	20
News Bulletin	35,000	350	10	700	20
Articles	10,000	100	10	200	20
Special Target Group (e.g., motor classifieds)	5,000	100	20	400	40

8.4.2.5 Interactive Marketing: The Framework is Changing

From Marketers' Strategies	To Consumers' Benefits
Lifetime Customer Value	Lifetime Savings and Reward Opportunity
Improved Product Quality	Mass Customisation
Targeted Messages	Fewer Extraneous Messages
Loyalty	Rewards and Recognition
Production Efficiency	Lower Prices
Inventory Efficiency	Guaranteed Availability
Distribution Efficiency	Wider Availability
Zero Defects	Product Satisfaction
Information Dissemination	Informed Decisions
Electronic Customer Communities	Access to Peers, Multilogue
Customer Dialogue	Seller Responsiveness
Reduced Marketing Cycle	Speedy Response, Time Savings
Competitive Advantage	New Value-Added Choices
New Selling Channels	New Supply Channels
Advertising Messages on Request	Advertising Messages on Demand

With the first booking catalogues for on-line ads out in Europe since 1996, on-line advertising could become a normal and accepted advertising medium.

The rules of marketing change in an on-line environment: From the marketers' strategy applied to many customers to individualised responses to the needs and interests of consumers, who take advantage of their newly gained power.

Sources

8.4.2.3 Burda Anzeigen Marktforschung (2/95)
8.4.2.4 European Commission: Electronic Publishing (1996)
8.4.2.5 Forrest/Mizerski: Interactive Marketing (1996)

* CPM – cost per million impressions. Impressions are defined by the number of times a page bearing the client's ad banner has been downloaded.

The shift in activeness from the marketer to the consumer in an on-line environment becomes apparent in every step of the marketing process.

8.4.2.6 Shift in "Activeness"

From the traditional advertiser who used to...	To the active consumer who...	and the computer, which...
Decide message's content	Selects and customises content bits • browses/filters through content bits • customises content bits to be rendered • recontextualises imagery • sets preferences and defaults	Works with descriptive bits • interprets descriptive bits in order to configure content bits • renders the individualised bits • processes consumer requests independent of direct human intervention
Decide media for distribution	decides bits to be rendered • audio, full motion video, text or multimedia • temporal and spatial dimensions (conversion of time into screen space)	enables digitisation-convergence of media
Decide audience/target based on research	decides advertiser based on specific interests, consumers are the targeters • downloads/renders content of choice	enables search for content • infobots, knowbots or smart agents search content
Decide schedule	decides schedule • content-bits on demand • converts time into space (condensing and expanding content)	allows asynchronous information retrieval

E-Cash: Selling and buying digitally is expected to grow enormously over the next decade. Different systems with different features are awaiting a mass market yet to come, with security still the hottest topic.

8.4.2.7 Comparison of Features and Comparative Strengths of Various Digital Money Systems, 1996

	CheckFree	CyberCash	DigiCash	First Virtual	NetBill	Netscape*	Open Market
Independence	yes	yes	yes	yes	yes	no, requires Netscape	no, only at designated cybermalls
Security	yes	yes	yes	yes	yes	yes	yes
Privacy	no	yes	yes	no, it is designed to link	no	no	no
Offline payment	yes, by check	yes, on smart cards	yes, on smart cards	no, Email is required	no	no	no
Transferability	sort of (EFT)	yes	yes	somewhat (credit cards aren't transferable)	no, credit cards only	no, credit cards only	probably within a cybermall
Divisibility	no, only standard denominations	yes	yes	(possibly yes at InfoHaus)	yes	no	no
Target customers	consumers	banks	consumers	info business	consumers	consumers	businesses
USP/Special service	bill paying	bank & merchant transactions	bill paying	microtransactions for selling info	info from universities	credit-card transactions	secure storefront

Sources

8.4.2.6 Forrest/Mizerski: Interactive Marketing (1996)
8.4.2.7 Lundquist/Lynch (1996): Digital Money; Freyermuth in Bollmann/Heibach (eds.) (1996)

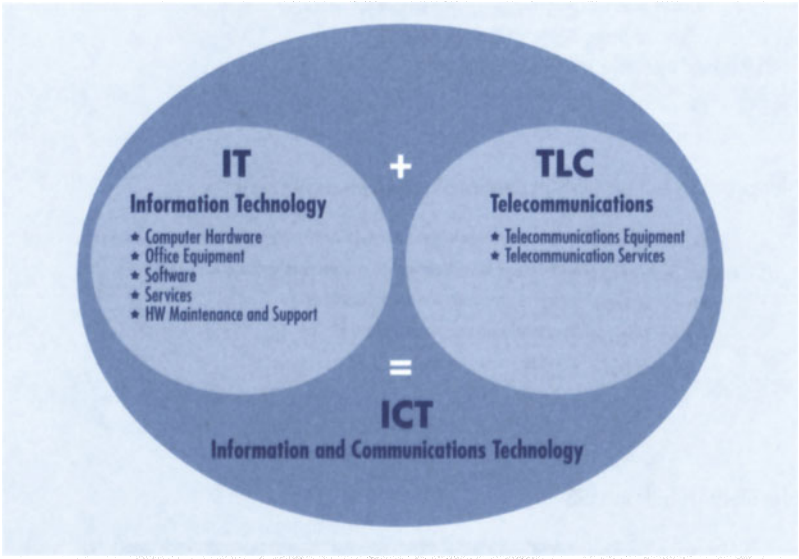
* Netscape works in an alliance with Mastercard and IBM, Microsoft has an alliance with Visa. Both systems agreed to set up a joint standard, the "Secure Transaction Code" (SET) that also Cyber Cash has agreed upon.

9. Telecommunications/Computing

9.1 IT/ITC/TLC

9.1.1 General

9.1.1.1 The Sectors of IT, TLC and ICT



9.1.1.2 Top 10 Public Telecommunications Companies

Rank '95	Company	Revenue in US$ bn 1994	1995
1	NTT (J)*	60.1	84.1
2	AT&T (US)**	43.4	47.3
3	Deutsche Telekom (D)	37.7	46.2
4	France Télécom (F)	23.3	29.6
5	BT (UK)*	21.3	22.8
6	Telecom Italia (I)	18.0	18.5
7	BellSouth (US)	16.8	17.9
8	GTE (US)***	17.4	17.4
9	MCI (US)	13.3	15.3
10	Sprint	n/a	13.6
–	BellAtlantic (US)	13.8	13.4
Top 10 Total Revenue		265.2	312.7

NTT, with 1995 revenues of more than 84 billion dollars, is the biggest telecommunication company worldwide. European Telecoms are doing comparably well.

Sources

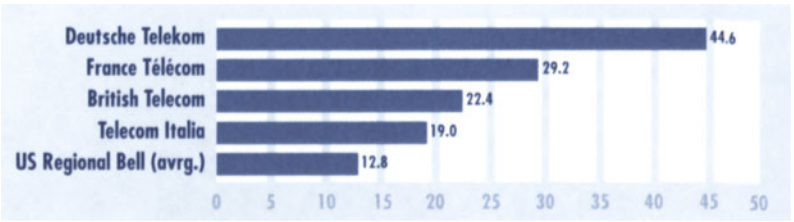
9.1.1.1 EITO (1996)
9.1.1.2 ITU (1995), Company annual reports; Financial Times: International Telecommunications Map, October 1996; Public Telephone Operators Database

* Year ending March 31 1996,
** AT&T telecommunication services revenue;
*** Not including overseas subsidiaries.

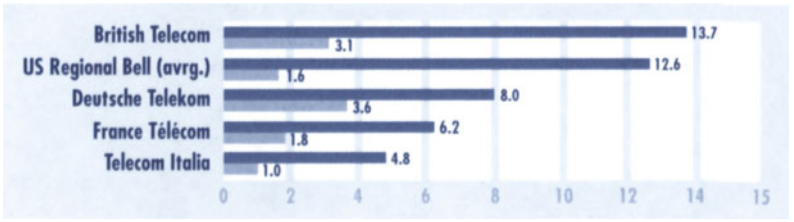
Privatisation fuels profitability: British Telecom can claim to have one of the highest net profit margins of telcos in Europe.

9.1.1.3 Comparison of the Main European and U.S. Telcos, 1995

Sales in billion US$

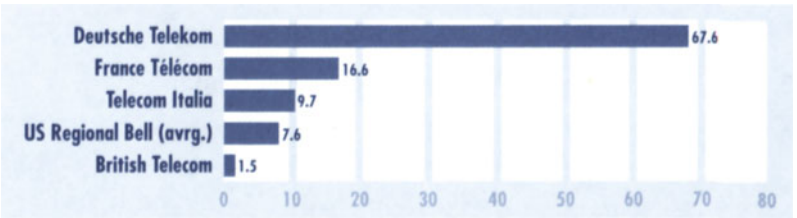


Net profit in billion US$ vs. net profit margin in percent

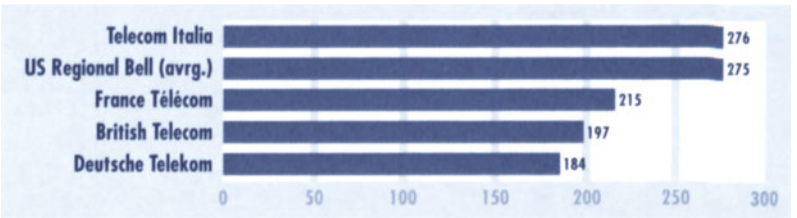


Going public brought a lot of money into the pockets of Deutsche Telekom in order to reduce their debts. But efficiency in terms of telephone lines installed per employee appears to be low.

Net Debt in billion US$



Telephone lines installed per employee



Sources

9.1.1.3 BZW/annual report; Time, December 2, 1996

9.1.2 ICT-Markets

9.1.2.1 Worldwide ICT Market - Market Value - Growth Trends

Eastern Europe includes Czech and Slovak Republic, Hungary, Poland and Russia. Figures for 1996 and 1997 are estimates

	Market Value in Million ECU					Growth Trends in %			
	1993	1994	1995	1996	1997	93 -94	94 - 95	95 - 96	96 - 97
Austria	5,940	6,452	6,843	7,480	8,232	8.6	6.1	9.3	10.0
Belgium/Lux.	7,716	8,119	8,748	9,686	10,707	5.2	7.7	10.7	10.5
Denmark	5,280	5,685	6,109	6,477	6,752	7.7	7.5	6.0	4.2
Finland	3,467	3,675	3,956	4,163	4,344	6.0	7.6	5.2	4.4
France	44,034	46,915	50,567	55,735	62,729	6.5	7.8	10.2	12.5
Germany	72,009	76,719	83,043	89,888	96,655	6.5	8.2	8.2	7.5
Greece	2,054	2,326	2,615	2,946	3,322	13.2	12.4	12.7	12.8
Ireland	1,921	2,017	2,137	2,300	2,459	5.0	5.9	7.6	6.9
Italy	26,026	27,621	29,712	31,954	34,424	6.1	7.6	7.5	7.7
Netherlands	13,030	13,783	15,416	16,726	18,440	5.8	11.8	8.5	10.2
Norway	4,730	5,080	5,395	5,661	5,973	7.4	6.2	4.9	5.5
Portugal	2,890	3,190	3,540	3,928	4,290	10.4	11.0	10.9	9.2
Spain	11,579	12,669	13,698	15,097	16,947	9.4	8.1	10.2	12.3
Sweden	8,865	9,605	10,525	11,135	11,649	8.3	9.6	5.8	4.6
Switzerland	11,770	12,787	13,808	15,086	16,503	8.6	8.0	9.3	9.4
UK	41,388	44,595	48,044	51,828	56,277	7.7	7.7	7.9	8.6
Western Europe	262,700	281,238	304,155	330,092	359,703	7.1	7.1	8.5	9.0
Eastern Europe	8,685	10,038	11,253	12,427	13,587	15.6	12.1	10.4	9.3
Europe	271,345	291,276	315,408	342,519	373,290	7.3	8.3	8.6	9.0
USA	299,487	314,515	306,431	321,823	342,344	5.0	-2.6	5.0	6.4
Japan	116.977	134,340	136,202	130,496	137,739	14.8	1.4	-4.2	5.6
Rest of World	158.868	173,900	174,612	190,005	211,637	9.5	0.4	8.8	11.4
Total	852,715	914,030	985,702	1,064,632	1,150,845	8.0	2.0	5.6	8.1

Greece, France and Spain are expected to be the most interesting European markets for information and communication technology with growth rates of more than 12 percent.

Sources

9.1.2.1 EITO (1996)

The USA still accounts for the biggest single market for information and communications technologies with a value of 337 billion ECU in 1995. Growth rates are enormous.

9.1.2.2 Worldwide ICT Market by Region, 1995

In billion ECU, Europe includes Western and Eastern Europe

	1995 Value	1994 (%)	1995 (%)	1996 (%)
Europe	315	31.9	32.0	32.2
USA	337	34.4	34.2	33.8
Japan	141	14.7	14.3	14.1
Rest of World	192	19.0	19.5	19.9
Total	986	100.0	100.0	100.0

Telcos and telecommunication equipment providers account for 50 percent of the entire ICT market.

9.1.2.3 International ICT Market by Product, 1995

	Value in Billion ECU	Share in %
Telecom Services	394.40	40
Telecom Equipment	98.60	10
Computer Hardware	177.48	18
Software Products	78.88	8
Data Comm. Hardware	19.72	2
Services	187.34	19
Office Equipment	29.58	3
Total	986.00	100

Similarly to the worldwide trend, telecommunication equipment and services are the dominant revenue sources in the ICT market.

9.1.2.4 Western European ICT Market by Product, 1995

	Value in Billion EC	Share in %
Telecom Services	130.72	43
Telecom Equipment	30.40	10
Computer Hardware	48.64	16
Software Products	30.40	10
Data Comm. Hardware	6.08	2
Services	51.68	17
Office Equipment	9.12	3
Total	304.00	100.0

Sources

9.1.2.2 EITO (1996)
9.1.2.3 EITO (1996)
9.1.2.4 EITO (1996)

9.1.3 IT/TLC-Markets

9.1.3.1 Worldwide IT Market - Market Value - Growth Trends

Figures for 1997 are estimates

	Market Value in Million ECU					Growth Trends in %			
	1993	1994	1995	1996	1997	93 -94	94 - 95	95 - 96	96 - 97
Austria	2,681	2,867	3,151	3,477	3,774	7.0	9.9	10.4	8.5
Belgium/Lux.	4,125	4,306	4,468	4,613	4,783	4.4	3.8	3.2	3.7
Denmark	2,984	3,243	3,540	3,786	3,948	8.7	9.2	6.9	4.3
Finland	1,710	1,821	2,036	2,182	2,291	6.5	11.8	7.2	5.0
France	21,896	22,514	23,730	25,255	26,865	2.8	5.4	6.4	6.4
Germany	35,353	37,305	40,079	42,906	45,514	5.5	7.4	7.1	6.1
Greece	451	495	553	619	,707	9.8	11.7	11.9	14.4
Ireland	688	725	772	816	859	5.3	6.5	5.7	5.4
Italy	11,402	11,641	12,221	13,019	13,978	2.1	5.0	6.5	7.4
Netherlands	6,794	7,345	8,032	8,711	9,421	8.1	9.3	8.5	8.2
Norway	2,351	2,511	2,748	2,906	3,097	6.8	9.4	5.8	6.5
Portugal	778	810	861	922	987	4.1	6.3	7.2	7.0
Spain	4,718	4,773	5,127	5,573	6,048	1.2	7.4	8.7	8.5
Sweden	4,260	4,607	5,189	5,533	5,796	8.2	12.6	6.6	4.8
Switzerland	5,532	5,895	6,392	6,963	7,496	6.6	8.4	8.9	7.7
UK	19,681	21,143	23,023	24,723	26,282	7.4	8.9	7.4	6.3
Western Europe	125,403	132,001	141,920	152,005	161,847	5.3	7.5	7.1	6.5
Eastern Europe*	3,069	4,013	4,693	5,242	5,776	30.8	16.9	11.7	10.2
Europe	128,472	136,014	146,613	157,247	167,623	5.9	7.8	7.3	6.6
USA	162,160	177,120	179,217	193,843	212,135	9.2	1.2	8.2	9.4
Japan	61,951	70,530	72,194	67,751	71,899	13.8	2.4	-6.2	6.1
Rest of World	48,348	55,706	58,558	66,419	77,989	15.2	5.1	13.4	17.4
Total	400,932	439,370	456,582	485,260	529,646	9.6	3.9	6.3	9.1

Japan and Western Europe have similarly low expected growth rates for information technologies for 1996/97, while the U.S. as well as Eastern Europe might enjoy growth rates above the world-wide average

Sources

9.1.3.1 EITO (1996)

* Eastern Europe includes Czech and Slovak Republic, Hungary, Poland and Russia.

France and Belgium are expected to become the European countries with the highest growth rates in the area of telecommunication services and equipment between 1996 and 1997.

9.1.3.2 Worldwide TLC Market - Market Value - Growth Trends

Figures for 1997 are estimates

	Market Value in Million ECU					Growth Trends in %			
	1993	1994	1995	1996	1997	93 -94	94 - 95	95 - 96	96 - 97
Austria	3,259	3,585	3,693	4,003	4,458	10.0	3.0	8.4	11.4
Belgium/Lux.	3,591	3,813	4,279	5,073	5,924	6.2	12.2	18.5	16.8
Denmark	2,296	2,442	2,569	2,692	2,804	6.4	5.2	4.8	4.2
Finland	1,757	1,853	1,919	1,980	2,054	5.5	3.6	3.2	3.7
France	22,138	24,401	26,837	30,481	35,863	10.2	10.0	13.6	17.7
Germany	36,656	39,414	42,982	46,964	51,141	7.5	9.0	9.4	8.9
Greece	1,603	1,831	2,062	2,327	2,615	14.2	12.6	12.9	12.4
Ireland	1,233	1,292	1,365	1,484	1,600	4.8	5.6	8.7	7.8
Italy	14,624	15,979	17,492	18,935	20,445	9.3	9.5	8.3	8.0
Netherlands	6,236	6,438	7,384	8,015	9,019	3.2	14.7	8.5	12.5
Norway	2,380	2,569	2,647	2,755	2,877	7.9	3.0	4.1	4.4
Portugal	2,112	2,381	2,680	3,005	3,303	12.7	12.6	12.1	9.9
Spain	6,861	7,896	8,571	9,525	10,900	15.1	8.5	11.1	14.4
Sweden	4,606	4,998	5,336	5,602	5,853	8.5	6.8	5.0	4.5
Switzerland	6,238	6,892	7,416	8,123	9,006	10.5	7.6	9.5	10.9
UK	21,707	23,452	25,021	27,105	29,994	8.0	6.7	8.3	10.7
Western Europe	137,298	149,236	162,235	178,087	197,856	8.7	8.7	9.8	11.1
Eastern Europe*	5,574	6,026	6,560	7,185	7,810	8.1	8.9	9.5	8.7
Europe	142,872	155,262	168,795	185,272	205,666	8.7	8.7	9.8	11.0
USA	137,327	137,395	127,214	127,980	130,209	0.0	-7.4	0.6	1.7
Japan	55,026	63,811	64,008	62,745	65,840	16.0	0.3	-2.0	4.9
Rest of World	110,520	118,194	116,053	123,586	133,648	6.9	-1.8	6.5	8.1
Total	445,745	474,661	476,071	499,583	535,364	6.5	0.3	4.9	7.2

Sources

9.1.3.2 EITO (1996)

* Eastern Europe includes Czech and Slovac Republic, Hungary, Poland and Russia.

9.2 Telephony

9.2.1 Installed Base of Telephone Main Lines and Forecast

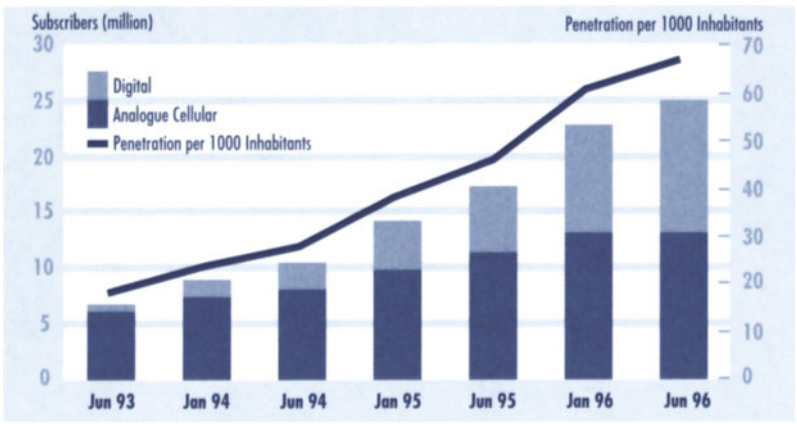
In Thousands

	1994	1995	1996	1997	1998	1999	2000	CAGR in % 1995-2000
France	31,600	32,434	33,149	33,785	34,416	36,072	37,028	+ 2.7
Germany	40,869	42,655	44,622	46,444	47,488	48,135	48,533	+ 2.6
Italy	24,678	25,326	26,141	27,125	28,277	29,427	30,437	+ 3.7
Spain	14,734	15,236	15,768	16,330	16,922	17,546	18,107	+ 3.5
UK	28,284	29,073	29,842	30,591	31,319	32,026	32,671	+ 2.4
Rest of Western Europe	57,083	59,376	61,675	63,898	66,154	68,412	70,617	+ 3.5
Western Europe	197,248	204,100	211,197	218,173	224,576	231,618	237,393	+ 3.1
Eastern Europe*	58,974	62,450	66,064	69,936	74,045	78,377	82,899	+ 5.8
Total Europe	256,222	266,550	277,261	288,109	298,621	309,995	320,282	+ 3.7
USA	152,978	158,124	163,672	169,507	176,289	184,593	192,961	+ 4.1
Japan	60,832	62,439	64,114	65,951	67,706	69,312	70,760	+ 2.5
Rest of World	186,693	213,872	242,872	275,372	299,239	328,408	357,604	+ 10.8
World	656,725	700,985	747,119	798,939	841,855	892,308	941,607	+ 6.1

The growth rate for newly installed telephone lines will be twice as high in Eastern Europe (+ 5.8 % Compound Annual Growth) as in Western Europe (+ 3.1%). People in Western Europe are instead investing into new Internet connections.

9.2.2 The Rise of Mobile Phone Usage (Analogue and Digital)

In Europe, 1993 - 1996



More than 12.3 million people in Europe use digital mobile telephony; additionally 15 million people use other mobile means of communication such as pagers.

Sources

9.2.1 EITO (1996)
9.2.2 EITO (1996); European Commission (1996)

* Eastern Europe includes Czech and Slovac Republics, Hungary, Poland and Russia.

Mobile Telephony is soaring in Scandinavia: 20 to 25 percent of all subscribers in northern Europe use cellular phones.

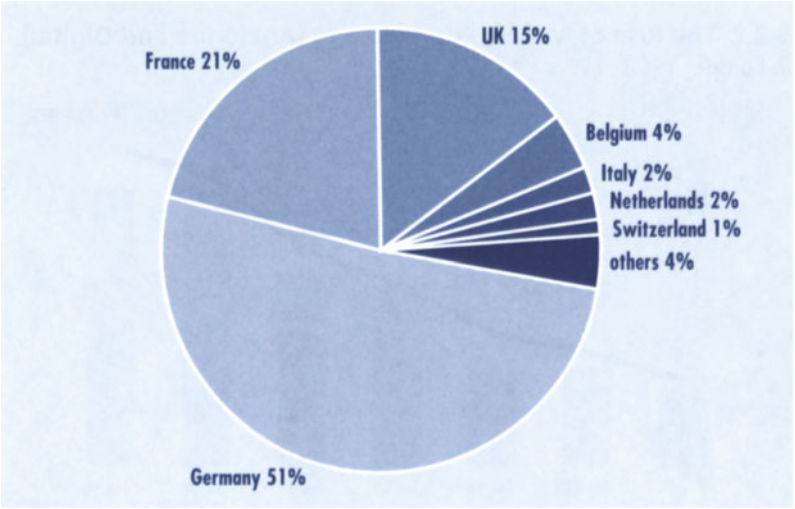
9.2.3 Cellular Mobile Telephone Subscribers

In Europe (1994) and Forecast

	Total 1994 (Thousands)	Per 100 inhabitants (1994)	As % of total subscribers	Forecast: Mobile Phone Subscribers Total (Thousands) 1995	1996	1997	1998	1999	2000	CAGR '95-2000 in %
Austria	278.2	3.51	7.0	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Belgium	126.9	1.26	2.7	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Denmark	503.5	9.73	13.9	574	1,205	n/a	n/a	n/a	n/a	n/a
Finland	649.2	12.77	18.8	823	1,249	n/a	n/a	n/a	n/a	n/a
France	803.9	1.39	2.5	1,350	2,200	3,500	5,000	6,800	8,500	44.5
Germany	2,501.4	3.08	6.0	3,900	5,400	7,200	9,100	11,100	13,000	27.2
Greece	167.0	1.60	3.2	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Ireland	88.0	2.48	6.6	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Italy	2,239.7	3.92	8.4	3,850	5,350	6,850	8,300	9,700	11,000	23.2
Luxembourg	12.9	3.22	5.5	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Netherlands	321.0	2.09	3.9	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Norway	588.8	13.64	19.8	800	1,054	n/a	n/a	n/a	n/a	n/a
Portugal	173.5	1.76	4.8	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Spain	411.9	1.04	2.7	950	1,600	2,300	3,100	4,000	5,000	39.4
Sweden	1,380.0	15.80	18.8	1,734	2,267	n/a	n/a	n/a	n/a	n/a
Switzerland	332.2	4.66	7.2	n/a	n/a	n/a	n/a	n/a	n/a	n/a
UK	3,757.0	6.47	11.7	5,400	7,200	8,900	10,500	11,900	13,100	19.4
Western Europe	14,400	n/a	n/a	23,050	32,250	42,050	52,000	61,900	71,200	25.3
USA	24,134.4	9.26	13.3	33,000	41,000	49,000	57,000	64,000	71,000	16.6
Japan	4,300.0	3.45	6.7	8,050	12,000	15,500	18,500	20,500	22,000	22.3
World	54,783.8	0.99	7.8	85,950	119,250	155,250	193,200	230,700	267,200	25.5

Germany accounts for the highest proportion of ISDN-Connections in Europe due to the enforced digitisation of lines by Deutsche Telekom, especially in eastern Germany.

9.2.4 The European ISDN-Market: 4.8 Million Subscribers



Sources

9.2.3 ITU (1995); EITO (1996); Wall Street Journal September 16, 1996
9.2.4 ITU (1995)

9.2.5 Forecast: Digital Telephone Connections via ISDN by 2000

Number of users in millions, Europe includes Switzerland and Norway

	Users in 1/1996	Users in 2000 (Projected)
Europe	9.2	24
USA	3.4	7.3
Japan	1.4	4.3
Rest of the World	0.8	3.7

ISDN is still not growing fast. By the time it is widely accepted, there might be much faster systems offering much higher data flows which are especially necessary for Internet services.

9.2.6 ISDN - Data Communications

Figures in thousands

	ISDN lines 1994	ISDN lines as % of main line	ISDN equivalent lines, installed base 1995	Leased circuits 1994
Austria	3.95	0.11	–	37.18
Belgium/Luxbg.	9.35	0.27	–	145.06
Denmark	5.89	0.16	–	132.71
Finland	2.56	0.11	–	–
France	103.00*	0.69	840	543.00*
Germany	428.09	1.41	1,669	816.53
Greece	–	0.00	v	4.97
Ireland	–	0.08	–	12.41
Italy	15.23	0.27	53	283.00
Netherlands	6.00	0.14	–	164.00
Norway	4.40	0.16	–	56.47
Portugal	1.83	0.03	–	35.11
Spain	5.39	0.19	113	55.27
Sweden	–	0.12	–	515*
Switzerland	29.25	0.68	–	127.07
UK	50.00*	0.68	755	500.00*
Western Europe	–	–	3,585	–
USA	352.11	–	1,144	13,500.00
Japan	239.43	–	984	1,032.01
World	1,280.60	–	5,865	20,392.00

Sources

9.2.5 European Commission (1996
9.2.6 ITU (1995); EITO (1996)

* figures for 1993

Telephony is cheap for private customers especially in the US, in the Netherlands and in Scandinavia. Companies in Austria pay on average three times as much as businesses in the Netherlands for their telephone bills.

9.2.7 Comparison of Telephone Tariffs

Average expenditure per year in US$*

Sources

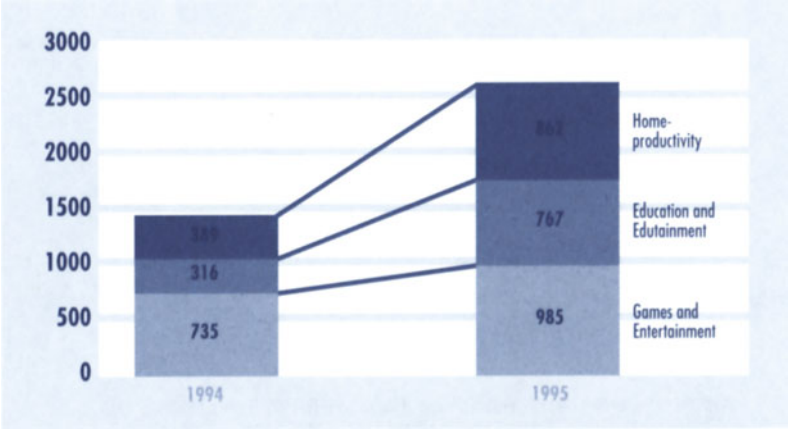
9.2.7 Bundesamt für Post und Telekommunikation; Der Spiegel 47/96, p. 36; ECC calculations (1997)

* Exchange rate: 1 DM = 0.7042 US$

9.3 Computing

9.3.1 Software Industry: Worldwide Turnover with Consumer Software, 1994/1995

In million US$



Consumer software from Edutainment to Home Productivity is rising fast: From 1994 to 1995 the market expanded by 82 percent.

9.3.2 European PC-Software Industry, 1995

Turnover in million US$

Yes, there is a European software industry: In 1995 companies generated a total turnover of US$ 1,981 million.

Sources

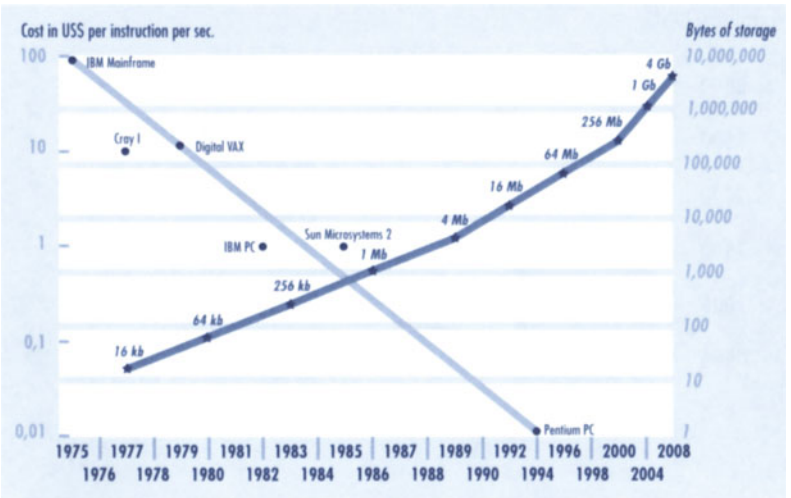
9.3.1 IDC, Computer Zeitung 19/1996
9.3.2 SPA, Computer Zeitung 16/1996

* including Iceland, excluding Sweden

Moore's Law ("Every 18 months the computing power doubles") has proved to be right so far: From 1977 till 1996 the chip memory capacity quadrupled every three years; the costs per instruction have gone down accordingly.

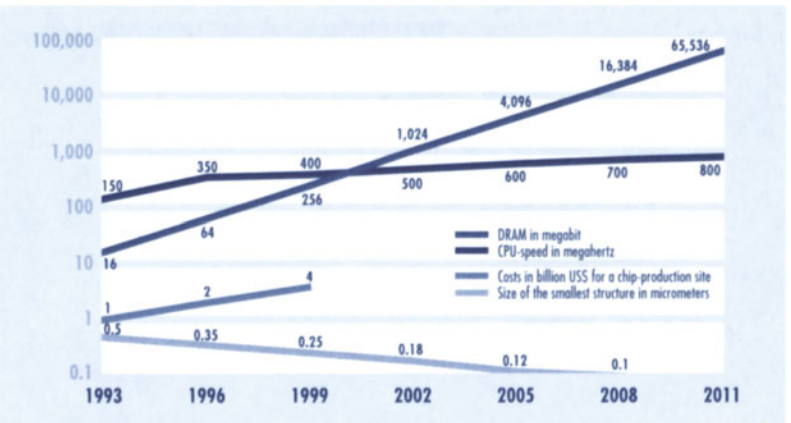
9.3.3 The Development of Chip Memory and the Costs of Information Processing

Costs in US$ per instruction per second with 1975 as Index = 100, Log scale; Chip memory in bytes of storage capacity, figures from 1996 - 2008 are forecast, Log scale



The ongoing integration and downscaling of chip structures allows higher processor speeds and more inbuilt storage capacity but leads to costly factories.

9.3.4 Forecast: Development of Chip-Production



Sources

9.3.3 ITU (1995); World Bank/The Economist, 28. 10. 96, p. 8; ECC calculations (1997)
9.3.4 Semiconductor Industry Association; Company Reports; Business Week; Computer Zeitung 25/96

9.3.5 Worldwide Shipments of PC Platform Operating Systems

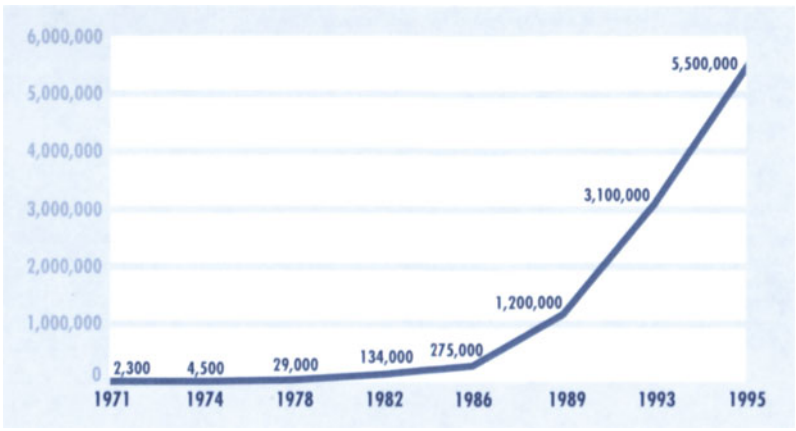
In thousand units, 1996: Forecast

	1995	1996
Windows 95, 97	18,534	45,727
Windows 3.1x	39,666	20,902
Mac OS	4,827	5,395
Windows NT (WS)	961	3,448
DOS (without Windows)	4,164	2,041
OS/2	1,746	1,899
NetWare (server licences)	509	606
Windows NT (SV)	318	550
UNIX (total)	382	373
Proprietary and Others	227	166
Total	71,332	81,107
of which are Microsoft OS	63,643	72,668

One of the biggest marketing campaigns in the software industry obviously paid off: With more than half of the 1996 operating systems market, Windows 95 demonstrates the frightening dominance of Microsoft.

9.3.6 Growing Complexity of Microprocessors

Number of Transistors on Intel-Chips



Exponential growth of the numbers of transistors on a computer chip has fueled the growth of processing power. Unfortunately it appears as if this growth is soaked up by overloaded software.

Sources

9.3.5 Dataquest; Screen Digest, September 1996
9.3.6 Der Spiegel 42/1996

Several, technologically quite different network architectures are currently under discussion. Which of these technologies will eventually succeed, is not yet certain. But what is certain is that future telecommunication applications need more bandwidth.

9.3.7 Alternative Broadband Access Network Architectures

Access network architecture	Characteristics	Costs in US$
FTTH (Fibre To The Home): Optical fibre to the user	• Needs convergence of telecom and audio-visual fields • Requires sufficient revenues to support investment • High costs due to both equipment and civil works • Application may be limited to high-density areas • High investment requirement may lead to high usage tariffs and risk of cross-subsidy from basic telephony services	3,300 - 5,300 per connection
FTTC (Fibre To The Curb) plus coaxial cable	• Can be supported by entertainment services alone • No obvious solution for voice services - at present mainly overlay, with US trials of integrated solutions under way • Probably the standard CATV architecture over the next decade • High costs mainly due to civil works associated with installation	1,600 - 3,300 per connection
Hybridstructures (fibreglass/coaxial)	• Preferred if >50 households per kilometer • Existing coaxial connections can be used • Sinking costs with growing number of connections	1,700 - 3,300 per connection
FTTC plus copper cable (ADSL)	• Maximises use of existing infrastructure • Allows continued separation of telecoms/audio-visual service provision • Needs sufficient revenue from telecoms and quasi-entertainment services • Defensive TO strategy for entertainment services, but currently seen as expensive in relation to potential revenues	600 - 1,000 per connection
HDSL (High bit rate Digital Subscriber Line)	• Needs double-core-copper-cable not existing in private households • Capacity 2 Mbit/s in both directions • Possible distance between connection and distributor 4 km	2,700 - 3,300 per connection
ATM (Asynchronous Transfer Mode)	• Standard for broadband communication connection	n/a
Return-channel within cable-networks	• Bandwidths up to a couple of Mbit/s possible • Is being installed within the U.S. by cable-companies (like TCI) • Connection with the phone-net possible => telephony by cable-connection	n/a
Return-channel within a satellite-network	• Allows the usage of the phone-networks as return-channels for satellite TV-services • Bandwidth of the return-channel defined by phone-line-capacity • Already in use in the U.S. as DirectTV	600 per "set top box" (DirectTV)
FTTC plus radio tail WLL (wireless local loop)	• Requires separate provision of telecoms and audio-visual services in the short-run, due to narrow bandwidth available on radio-path • European mobile/PCN leadership is crucial • Under-developed fixed infrastructure areas are the initial beneficiaries • Needs rapid evolution of data-compression technology • Evolution to UPT (universal personal telephony) could result in low per-user costs and greater capacity	Infrastructure investment: 1.1 - 2.2 bn
UAV (Unmanned Aerial Vehicle) Halo (High altitude long endurance)	• Low altitude (20 km/66,000 ft) transmitter systems • Solar powered, or via microwaves • Low costs for construction and launch; easier to start and to control compared to conventional satellites • Only covers small areas of up to 180,000 sqkm • Still in development/testing phase	Infrastructure investment: 10-15 m

Sources

9.3.7 EITO (1996); EC Green Book on Liberalization of Telecom Infrastructure and Cable TV Networks (1995); Booz Allen & Hamilton (1995), Wirtschaftswoche 9/96; Riehm/Wingert (1996); ECC research (1997)